

Journal OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—San Antonio, Oct. 15-18, 1956

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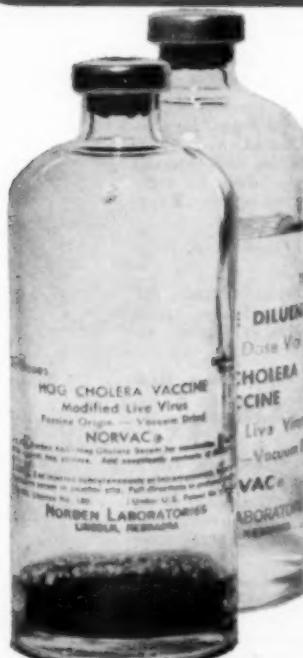
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AVMA Report

Veterinary Medical Activities

A meeting of the AVMA Board of Governors (J. M. Arburua, Floyd Cross, and Wayne O. Kester) was held at Association Headquarters on Friday, March 9, followed by a meeting of the AVMA Executive Board on March 10 and 11.

Executive Board members attending included T. Lloyd Jones, District I; S. F. Scheidy, District II; R. S. Sugg, District IV; F. B. Young, District V; Joseph M. Arburua, District VI; E. C. Stone, District VII; W. G. Brock, District VIII; Edwin Laitinen, District IX; Wade O. Brinker, District X; Floyd Cross, ex officio; Wayne O. Kester, ex officio; A. H. Quin, ex officio. (L. M. Hutchings, District III, is in Columbia, South America.)

The agenda of the meeting included the following items:

- 1) Informal report of executive secretary.
- 2) Informal report of treasurer.
- 3) Informal reports of editorial staff:
 - a) Editor-in-Chief.
 - b) Assistant Editor and Advertising Manager.
 - c) Advertising matters for Board action.
- 4) Professional Relations items—Dr. Kingman.
- 5) Report of Washington Representative—General J. A. McCallam.
- 6) Report of Director of Membership Services—Mr. R. G. Rongren.
- 7) Reports of Board committees:
 - a) Method of electing officers.
 - b) Cooperation with the American Association of Equine Practitioners.
 - c) Amendments re: professional conduct.
- 8) Meeting invitations for officers and staff members.
- 9) Report on budget status as of Feb. 1, 1956.
- 10) Convention matters:
 - a) Wind-up report on Minneapolis meeting.
 - b) Status of plans for San Antonio and schedule of sessions.
 - c) Status of plans for adjourned final session in Mexico City.
 - d) Approve registration fees.
 - e) Other convention data:
1957 meeting—Cleveland, August 19-22.
1958 meeting—Philadelphia, August 18-21.
1959 meeting—Kansas City—dates to be set.
1960 meeting—Denver, Los Angeles and Phoenix invitations—should decide location at San Antonio after inspection of facilities.
- 11) Publicity and Public Relations items.
- 12) Proposed amendments to Constitution and Bylaws.
- 13) Committee reports and related matters:
 - a) Interim report of Special Committee on Insurance.
 - b) Proposed revision of "Essentials" by Council on Education.
 - c) Does the AVMA want to take on administration of new awards?
- 14) Membership matters.
- 15) Directory matters—report on 1956 edition.
- 16) Research fund contributions.
- 17) International Veterinary Congress matters:
 - a) 1957 (XVIth) Congress can not be held in Buenos Aires.
 - b) U.S. Committee for XVIth Congress should be set up.



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1. Grumbles, L. C., Wills, F. K., and Boney, W. A.: J. Am. Vet. M. A. 124: 217, 1954. 2. Smith, H. W.: Vet. Rec. 66: 215, 1954. 3. Cosgrove, A. S.: Vet. Med. In press.

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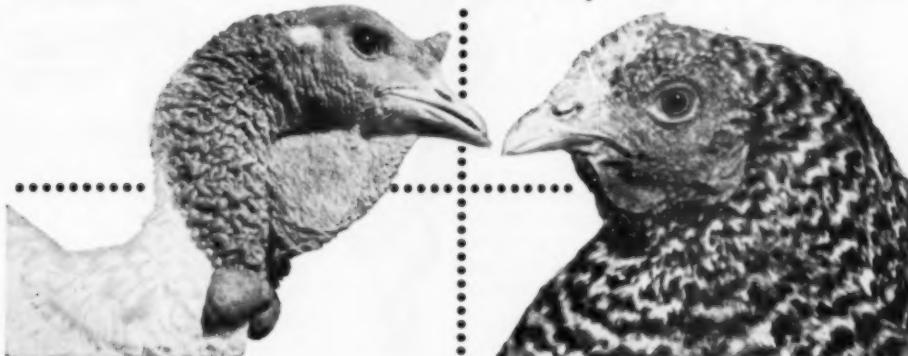
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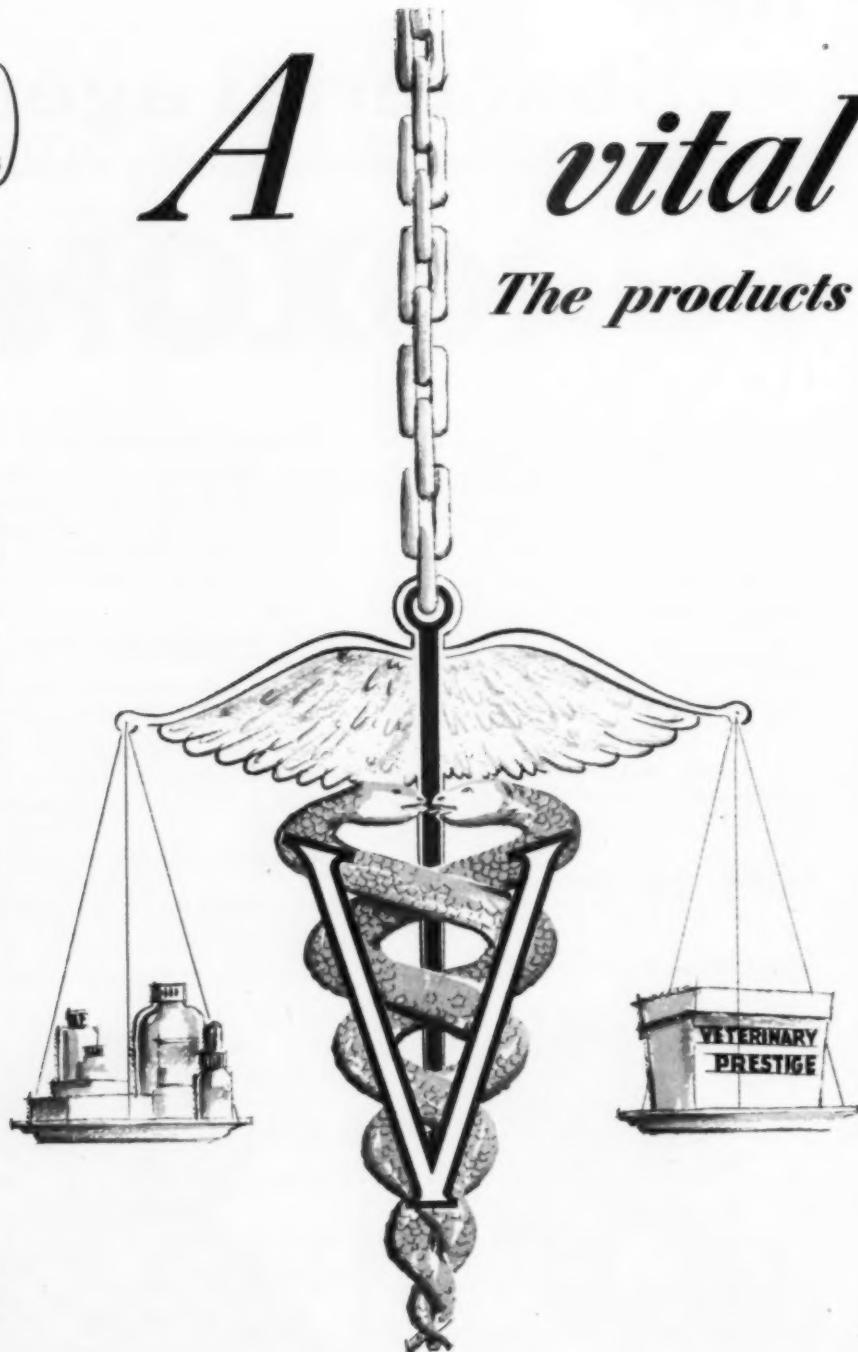
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JOURNAL

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Vol. 128

APRIL 1, 1956

No. 7

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Achondroplasia in a Litter of Pups

G. W. MATHER, D.V.M., Ph.D.

St. Paul, Minnesota

THREE 8-week-old Scottish Terrier pups from a litter of 6 were presented for examination. The 3 pups, and an additional 1 affected in less marked degree, showed evidence of improper skeletal development at birth and the abnormality had persisted.

The pups lay on their ventrums (fig. 1 and 2) with their legs in extreme abduction in a turtle-like position. They were unable to walk. When locomotion was attempted, they merely "paddled" their bodies forward with a degree of lordotic flexion of the spine which forced the pelvis and the pelvic limbs upward. The chest and the anterior abdomen were flattened dorsoventrally (fig. 3A and B).

One male and 1 female were held for observation and euthanasia was performed immediately on the third. Necropsy by pathologists at the School of Veterinary Medicine, University of Minnesota, revealed no gross anatomical changes other than those of a malshaped thoracic cage.

No visible histopathological lesions of the lungs, kidneys, brain, thyroid glands, or parathyroid glands were observed.

In the adrenal glands, the cells in the glomerular zone were extremely fatty and hypertrophied.

In sections of the distal end of tibia, the cartilage cells and the bone formation appeared normal in every respect.

The 2 pups which were held for observation were fed a presumably adequate ration until euthanasia at the age of 4 months. Although they gained weight normally, they retained the same abnormal conformation. They became a bit more pro-

From the School of Veterinary Medicine, University of Minnesota, St. Paul.

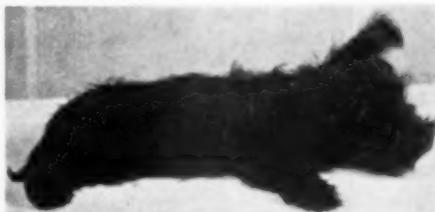


Fig. 1—Photograph of an achondroplastic Scottish Terrier pup. Notice position of legs which limits locomotion to a paddle-like motion.

ficient in paddling around but were unable to stand.

A number of hemograms were made, during the two-month period, without finding significant abnormalities.



Fig. 2—Two Scottish Terrier Pups, 8 weeks old, with achondroplasia. Notice the flattened chests and sprawled position of the legs.

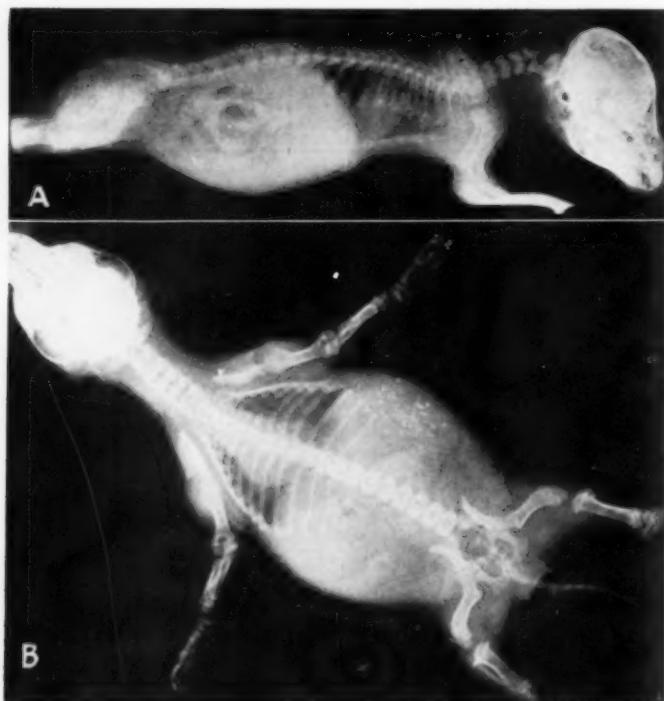


Fig. 3—Radiographs, lateral view (A) and dorsoventral view (B), of a Scottish Terrier, 8 weeks old, with achondroplasia. The long bones are thicker and shorter than normal, and the epiphyses and metaphyses are poorly developed.

The serum calcium and inorganic phosphorus determinations were of clinical interest in view of the fact that levels of both elements were believed to be elevated. The phosphorus levels per 100 ml. of serum were: in the female pup, 7.0 mg. at 2 months of age, 8.5 mg. at 3 months, and 10.0 mg. at 4 months; in the male, 7.9 mg. at 2 months and 9.0 mg. at 4 months. The calcium levels per 100 ml. of serum were: in the female, 13.0 mg. at 2 months of age and 14.4 mg. at both 3 and 4 months; in the male, 12.0 mg. at 2 months of age.

Postmortem examinations of the 2 pups showed no gross abnormal findings other than the malformed thoracic cages and the enlargements of the costosternal articulations.

The diagnosis was achondroplasia which is a failure of cartilage to develop properly. This skeletal disease has its beginning in fetal life and produces a form of dwarfism. It is also called chondrodystrophia foetalis or fetal rickets. No treatment for this anomaly has been of benefit.

Veterinarians Get Rabies Vaccine

At the California State Veterinary Medical Association meeting at Davis in January, under the supervision of the Expert Committee on Rabies, World Health Organization, 200 veterinary practitioners received the new Flury type of rabies vaccine which produces long-lasting protection. Because of the increased incidence of rabies in wildlife, including bats, the veterinarians were sufficiently interested to submit themselves for vaccination and to later give blood samples for testing the degree of immunity produced. The World Health Organization is gathering as much of this information as possible to determine the efficiency of this vaccine. There are now 36 counties in California quarantined by the State Health Department and 18 counties and 5 cities have passed compulsory canine vaccination ordinances.

Enzootic Echinococcosis in Uruguay—Some Public Health and Livestock Aspects

DONALD L. BUSH, D.V.M., M.S.

Port-au-Prince, Haiti

ECHINOCOCCOSIS, or hydatid disease, is a problem of special importance in Uruguay from the viewpoints of public health and livestock losses. Mackie¹ defines hydatid disease as an infection by the larval form of *Echinococcus granulosus* in man or other intermediate hosts. It is characterized by the formation of single or multiple expanding cysts which may be unilocular or alveolar in character.

Uruguay is one of the most intensive livestock countries in the world. Of her total land area of some 18 million hectares (72,172 sq. mi.), 83 per cent is devoted to the maintenance of about 8 million cattle and 23 million sheep, more per land area than any other Latin American country. Native pasture is the principal feed and, since rotation is not practiced to any extent, the pastures become heavily parasitized.

GEOGRAPHICAL DISTRIBUTION

The highest prevalence of hydatid disease is in sheep-raising countries, usually temperate or subtropical, where man is closely associated with infected sheep dogs. The three countries in South America where its incidence is highest in man² are Argentina, Paraguay, and Uruguay—all in the Plate River region.

Faust³ has emphasized that the geographical distribution of hydatid disease is dependent on its incidence and distribution in reservoir hosts, particularly sheep, cattle, and pigs. The most extensive and intensive enzootic regions are those of sheep-raising countries, especially Iceland, South Australia, Tasmania, New Zealand, the northern and southern parts of Africa and, particularly, Argentina and Uruguay. In addition, infection in man occurs frequently throughout northern and southern Europe, Siberia, Turkistan, North China, Japan, Tonkin, the Philippines, and Arabia.

Hawkins and Morgan⁴ have stated that the incidence and distribution of this infection in the United States is unknown.

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Native residents of Virginia, Missouri, Minnesota, Nebraska, Colorado, Wyoming, California, Oklahoma, Utah, and Louisiana have contracted the disease. Numerous reports have indicated that there are local infections in domestic and wild animals in North America, Alaska, and the Arctic regions,⁵⁻¹⁰ while Magath¹¹ reports that apparently the infections are increasing. Hydatid disease has been reported in chinchillas, and the cysts may be mistaken for tumors.¹² The fact that the hydatid cysts frequently may degenerate and undergo calcification or necrotic caseation could result in confusion and mistaken diagnosis on necropsy.

ETIOLOGY

The adult *E. granulosus* occurs mainly in carnivores such as dogs, wolves, and foxes. According to Faust,¹³ the adult *E. granulosus*, which lives attached to the villi of the small bowel of the dog and other definite hosts, is a minute tapeworm, measuring 3 to 6 mm. in length; having pyriform scolex 300 μ in diameter, provided with four suckers, and armed with 28 to 50 (usually 30 to 36) hooklets; an attenuated neck, one immature proglottid, one mature proglottid, and usually only one gravid proglottid. The terminal proglottid is the broadest and largest, the mature one the narrowest. In the gravid unit, the uterus bursts either before or after evacuation of the gravid proglottids from the bowel, discharging the eggs, which are relatively few. According to both Faust and Mackie,^{13,14} the ova are indistinguishable from other *Taenia* ova found in dogs or man. They possess thick brown shells which surround the six-hooked oncospheres. The maximum diameter of the ova ranges between 30 and 38 μ .

EPIDEMIOLOGY

Infection of man with the larval form of *E. granulosus* occurs where there is close association between man and dog. The prevalence of the disease in man is conditioned upon a number of factors, the most

important of which are: (1) the degree of infection of sheep, cattle, and hogs; (2) the degree of infection and the number of dogs; and (3) the sanitary habits and customs of the people.

The percentage of hydatid disease in sheep in Ireland has been reported as 12.0 per cent, in Argentina as 11.0 per cent, Australia 36.0 per cent, in New Zealand 35.0 per cent, Syria and Palestine 70.0 per cent, North Prussia 27.0 to 51.0 per cent, in Germany as a whole 2.0 per cent, and in Wales 3.4 per cent.¹⁵ The author's investigations while in Uruguay indicate that 100 per cent of the old ewes are infected. The investigations conducted by Monnig¹⁶ revealed that sheep as a natural host had 92.0 per cent fertile cysts, cattle 10.0 per cent, and swine 80.0 per cent.

The customs, habits, and climate in the interior of Uruguay are ideal for the propagation and dissemination of *E. granulosus*. The dog population in Uruguay is not definitely known but it has been estimated at 1 dog per four to eight inhabitants. Within an average square mile, there are about 332 sheep, 111 cattle, 4 to 8 dogs, and 33 persons exposed to this parasitic disease.

Home or ranch consumption of large quantities of mutton and also poor construction of many local abattoirs favor the propagation of hydatid disease. Dogs have access to the offal or it is fed to them. Also, sheep are most commonly killed and eaten in the rural areas, while cattle and hogs are killed in meat-packing plants or abattoirs. The old ewes, which all seem to be infected, are most commonly eaten on ranches, and the viscera are fed raw to the dogs. In the country, the dog frequently shares the same food and quarters with his master.

Bregante *et al.*¹⁷ in Uruguay, reported that the occurrence of *Echinococcus* from 1947 to 1951 was 35 per cent in steers, 46 per cent in cows, 39 per cent in bulls, 55 per cent in oxen, and 13 per cent in swine.

LIVESTOCK

An evaluation of the effect of the parasite in the host animal is based on the meat production of beef cattle, swine, and sheep; the milk production of dairy cows;¹⁸ and the effects on the work load of draft animals.

Economic losses due to hydatid disease

in livestock are difficult to evaluate, because animals seldom show clinical symptoms when the parasite is passing through the asexual cycle. Although cystic involvement may cause pressure atrophy and obscure clinical signs, the only accurate index of the infection would be the pathological manifestations observed in slaughterhouses or packing plants.

Hydatid lesions may be visible on the surface of the organs or, when deeply located, the large cysts may be recognized by palpation and incision. Because of the nature of the disease and length of time required to form sizable cysts, there can be no doubt that there are many unrecognized cases of hydatidosis. One month or so after invasion of the oncospheres in the alimentary tract and dissemination of the embryos from the intestines, mainly through the portal circulation, a white nodule 1 mm. in size may often be seen in the liver. At 5 months, the cyst may be 15 to 20 mm. in diameter and the first daughter cysts with scolices are then formed. The *Echinococcus* cysts have a tendency to degenerate and undergo calcification or necrotic caseation with death of the scolices.

In Uruguay, evaluation of economic losses from condemnations due to hydatid disease is extremely difficult, since flukes also cause lesions in the liver. In various provinces 25 to 100 per cent of the livers are condemned due to *Echinococcus* infections or liver flukes, or both. In 1951, when 1,089,120 cattle were slaughtered in Uruguay, the loss of 25 to 100 per cent of the liver would have meant 1,633,680 to 6,534,720 kg. of liver (1.1% of live weight) condemned from cattle alone, due to a combination of echinococcosis or diastomiasis.

PUBLIC HEALTH

During the ten-year period 1935 through 1944, a total of 3,780 persons (almost 400 per year), mostly from sheep-raising areas, were admitted to hospitals in Uruguay with a diagnosis of hydatid disease. From 1898 to 1903, one of every 137 patients discharged from the Maciel Hospital was suffering from hydatid disease, and from 1929 to 1934, the ratio was one out of every 156 patients in all of the hospitals of the Republic. The exact morbidity is undoubtedly much higher.

In Uruguay, it appears to occur more

frequently in men than in women, and in young adults than in children or in the aged.

SUMMARY

The highest prevalence of hydatid disease is in sheep-raising countries where man is closely associated with infected sheep dogs. The sanitary customs and habits of a people play an important part in the dissemination of this disease. Sheep may be the most important intermediate host as they have been found to have 92 per cent fertile cysts, swine 80 per cent, and cattle only 10 per cent. The dog population in Uruguay has been estimated at 1 dog per four to eight inhabitants.

The occurrence of echinococcosis from 1949 to 1951 was estimated at 35 per cent in steers, 46 per cent in cows, 39 per cent in bulls, 55 per cent in oxen, and 13 per cent in swine. The author found 100 per cent of the old ewes infected in Uruguay and 2,069,429 kg. of sheep offal is estimated to be fed to ranch dogs annually. In cattle alone, 1,633,680 to 6,534,720 kg. of liver was condemned due to hydatidosis and diastomiasis in 1951.

Degenerated hydatid cysts may be confused with tumorous outgrowths and nodular calcifications in the liver and lungs.

The public health significance of hydatidosis is presented.

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Hydatid Disease in North America

In 1951, there were 45 cases on record of North Americans who positively had contracted *Echinococcus* cysts or hydatid disease on this hemisphere. Of the last 4 cases, 3 were children, 4 to 19 years old, who had never lived outside of Utah.—*Am. J. Med.*, Sept., 1952.

The Status of Garbage Feeding

On Dec. 31, 1955, 20 states were feeding no raw garbage to swine and in only three states (New Jersey, Texas, Connecticut) were more than 6,000 swine being fed raw garbage. Semimonthly inspection of all herds where garbage was fed were conducted in 14 states and inspection of more than 90 per cent of the herds in a total of 32 states. Only in Texas were there no semimonthly inspections. In California, 219,370 swine were regularly fed garbage, all of it cooked and all properly inspected. In New Jersey, 219,743 swine were fed garbage, two-thirds of it cooked, and 80 per cent of the herds were properly inspected. In the nation, garbage was being cooked on 85.9 per cent of the premises where it was fed and for 88.5 per cent of the swine which were being fed garbage.—*U.S.D.A., Dec. 31, 1955*.

In doing a necropsy on a large animal, a dehorning saw or large pruning shears will cut the rib cage and expose the thorax without spattering blood and possibly spreading infective material.—*Harold Breen, D.V.M., Wyoming*.

Satisfactory General Anesthesia in Birds

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CONCURRENT with the recent increase in popularity of pet birds, veterinarians are being confronted with an increasing demand for rendering services to the avian species. Many veterinarians have found that the lack of a reliable, readily administered general anesthetic has set stringent limitations upon the treatments and surgery which may safely be performed on birds.

Ether,³ nembutal^{®1,4,6} (intravenously or intraperitoneally), chloral hydrate² (intravenously), and sodium amytal⁵ (intravenously) have all been used by different workers. However, the problems attendant to their clinical use prompted further search for a reliable, readily administered, avian anesthetic.

VOLATILE ANESTHETICS

Prior to this study, clinical trials had ruled out the use of volatile anesthetics for other than brief operations because of inherent difficulties arising from the anatomical structure of the avian respiratory system.² These volatile agents infiltrate the bird's air sac system and may cause a dangerous overconcentration of the anesthetic. Nevertheless, we have had success in anesthetizing birds with ether for procedures of short duration. This is accomplished by intermittent administration of the ether, allowing brief periods of free access to air both during induction and after the desired stage of anesthesia is attained. This technique allows for the cumulative effect of a volatile anesthetic in the air sacs and obviates any danger of overconcentration with subsequent respiratory failure.

PARENTERAL ROUTE OF ADMINISTRATION

In the initial trials with parenterally administered anesthetic agents, nembutal* was slowly injected to effect via the median vein. It produced satisfactory surgical anesthesia in many birds ranging in size from pigeons to chickens. This success was overshadowed by an apparently small mar-

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*A 6 per cent solution of pentobarbital sodium (Abbott).

gin of safety, and several trials terminated fatally. Subsequently, simultaneous injection and cardiac auscultation was practiced and the abrupt and extreme bradycardia noted following administration of even a partial dose of nembutal prompted further search for a satisfactory anesthetic agent. These trials, in addition to the obvious mechanical difficulties attendant to venipuncture in small birds, such as finches, canaries, and parakeets, disclosed the following major shortcomings of the intravenous method:

1) Absolute restraint of the bird in an unnatural position was mandatory throughout the injection period. Such a procedure is quite likely to induce shock (which is frequently fatal), especially in pet birds and the more exotic species, but less so in domestic fowl.

2) As the wing must be held extended while the bird is restrained in dorsal recumbency, any sudden movements by the bird might result in a fracture or luxation of the humerus, radius, or ulna.

3) Even when venipuncture is successfully accomplished, bird veins are so thin-walled that the slightest thrashing during injection is likely to rupture the vein. It is possible in an intractable patient for both median veins to be made useless for further injections.

Subsequently, the intramuscular route of administration was considered. This method eliminated the difficulties of intravenous injection and had no serious drawbacks of its own, provided a satisfactory, nonsloughing anesthetic could be found. Furthermore, it would insure a more gradual absorption of the anesthetic, providing an added safety factor.

The most imposing problem was to determine which anesthetics could safely and satisfactorily be given intramuscularly on a weight basis. After trying several combinations of pentobarbital sodium, magnesium sulfate, and chloral hydrate with varying degrees of success, attention was focused on equithesin.* Trials with this product were initiated with the idea that

*Equithesin is produced by Jensen-Salsbury Laboratories, Kansas City, Mo. Each 500 cc. contains 21.3 Gm. of chloral hydrate, 4.8 Gm. of pentobarbital, and 10.6 Gm. of magnesium sulfate in aqueous solution of propylene glycol with 9.5 per cent alcohol.

TABLE 1—Experimental Trials of Equithesin at a Dosage of 2.5 cc. per Kilogram of Body Weight

No.	Bird	Weight (kg.)	Dose (cc.)	Induction time (min.)	Duration of light to deep surgical anesthesia (min.)	Interval between injection and regaining ability to stand (min.)
9	Canaries	0.018 - 0.026	0.05 - 0.07	15 - 20	35 - 50	75 - 110
16	Chickens	1.4 - 3.3	3.5 - 8.3	10 - 30	35 - 75	100 - 180
50	Parakeets	0.021 - 0.047	0.05 - 0.12	10 - 20	20 - 55	50 - 140
22	Pigeons	0.24 - 0.47	0.60 - 1.2	10 - 35	25 - 65	60 - 160
7	Sparrows	0.022 - 0.026	0.06 - 0.07	20 - 25	25 - 35	50 - 90

the average busy practitioner would benefit far more from the adaptation of an anesthetic agent that was readily available commercially than if he had to mix minute quantities of some special formula as each occasion arose.

Following preliminary work, a dosage of 2.5 cc. of equithesin per kilogram of body weight was selected, as it seemed to produce safe surgical anesthesia of satisfactory duration.

Our procedure, both in experimental and clinical trials, consisted of weighing the bird, injecting the prescribed amount of equithesin deep into the breast muscle, and releasing the bird in a small, well-ventilated, confined area. The total elapsed time, from the initial handling of the

bird to release following injection, was routinely less than one minute. Smaller birds (canaries, parakeets) were weighed in a covered glass beaker or cardboard box that had been previously counterbalanced on a common drug scale (the type most veterinarians have in their office, with two pans and a sliding 5-Gm. scale). Larger birds were satisfactorily weighed on a bathroom scale as is commonly done with dogs.

For administration of equithesin to the smaller species, a 1-cc. glass tuberculin syringe and 25-gauge needle were used. For larger birds, correspondingly larger needles and syringes were used.

The induction time, duration, and depth of anesthesia varied with the individual

TABLE 2—Clinical Trials of Equithesin Using 2.5 cc. per Kilogram of Body Weight

Bird	Weight (kg.)	Dose (cc.)	Duration of satisfactory surgical anesthesia (min.)		Surgical or other procedure
			Induction time (min.)	Duration of surgical anesthesia (min.)	
Bantam chicken	0.62	1.6	17	45	Egg-bound; egg laid voluntarily 20 minutes postinjection.
European crane	5.1	13.0	15	60	Compound fracture of tibia, coaptation splintage.
Eastern crow	0.45	1.0	18	65	Compound fracture of humerus; open reduction and fixation with intramedullary pin.
Eastern crow	0.42	1.1	15	50	Amputation of necrotic wing tip.
White Pekin duck	2.3	5.8	20	45	Removal of fibrous proliferative "bumblefoot" lesion.
Red jungle fowl	0.54	1.4	22	50	Removal of caseous necrotic material from sinus.
California gull	0.6	1.5	15	55	Tibial fracture; open reduction and fixation with intramedullary pin.
Herring gull	0.8	1.8	20	50	Tibial fracture; closed reduction using intramedullary pin.
Laughing gull	0.3	0.75	27	65	Repair laceration of mandibular web.
Saw-whet owl	0.14	0.35	14	85	Examination of traumatic wounds.
Parakeet	0.03	0.08	15	30	Remains of broken egg removed from oviduct and cloaca.
Parakeet*	0.04	0.06	15	25	Egg-bound; delivered egg intact manually 35 minutes postinjection.
Peacock	4.5	11.0	15	35	Amputation of second digit on right foot.
Peacock	4.6	11.6	20	90	Devoicing.
Peacock	4.5	11.3	25	65	Devoicing.
Impeyan pheasant*	2.0	4.4	20	45	Repair of extensive scalp lacerations.
Wood rail	0.37	0.93	20	65	Removal of left lens; bird affected with bilateral cataracts.
Yellow-billed toucanet	0.16	0.4	18	60	Repair of traumatic wounds.

*These birds were in a weakened condition and, therefore, given less than the prescribed 2.5 cc./kg. dosage.

bird. During induction, body tremors were noticed on many of the smaller birds, while occasional individuals of all sizes displayed incoordinated movements of the head and neck and paddling motions with the feet. There was never cause to worry about a bird injuring itself during induction, provided the confining area had a smooth bottom and sides and was devoid of any projecting objects.

TABLE 3—Experimental Trials of Equithesin at a Dosage of 3.0 cc. per Kilogram of Body Weight

No. Birds	Weight (kg.)	Recovered	Died
17 Grackles	0.10 - 0.15	14	3
26 Pigeons	0.23 - 0.48	21	5
6 Chickens	1.50 - 3.35	6	0
Totals	—	41	8

Recovery was uniformly uneventful, with a minimum of incoordinated movement. As an added precaution, the induction container is utilized to confine the bird during recovery.

Daily postinjection examination of the breast muscle at the site of the injection revealed no signs of sloughing in any of the 122 trials.

Tables 1 and 2 summarize both clinical and experimental trials of equithesin, using 2.5 cc. per kilogram of body weight. No mortality was experienced in either group of birds at this dosage level.

MARGIN OF SAFETY

After experiencing no mortality at the 2.5-cc. per kilogram dosage level, trials were initiated to determine the maximum amount of equithesin that could be safely given at a single injection. Table 3 summarizes these results and indicates that a dosage of 3.0 cc. per kilogram resulted in a 19.5 per cent mortality.

DISCUSSION

As with mammals, birds that are weak, debilitated, senile, or suffering from shock do not tolerate general anesthesia as satisfactorily as healthy specimens. It is, therefore, advisable to reduce the dosage in these patients to 2.2 or 2.0 cc. per kilogram of weight.

It may at times be desirable to prolong the period of surgical anesthesia. Preliminary trials indicate that an additional 25 per cent of the original dose (at 2.5 cc.

per kilogram) may be safely given after 45 to 60 minutes have elapsed.

Of interest is the successful use of this anesthetic to "deliver" egg-bound birds (table 2). The relaxation that is obtained under general anesthesia will either facilitate natural delivery of the egg, or give the practitioner a chance to deliver the egg by gentle manipulation. Obviously, the danger of shock from severe manual restraint and manipulation, which has been such a great problem in treating egg-bound birds, is virtually nonexistent while the bird is under general anesthesia.

SUMMARY

In 122 clinical and experimental trials on birds ranging from canaries to peacocks, safe, satisfactory surgical anesthesia was readily induced using intramuscular injections of equithesin at a dosage of 2.5 cc. per kilogram of body weight.

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Evaluation of Uterine Infusions

To evaluate various intrauterine preparations advocated for correction of infertility, 439 "repeat-breeding" cows were treated. Preservisal was used in 101 cows, an iodine solution in 133, tyrothricin solution in 45, and various types of penicillin and streptomycin mixtures in 160. They were treated at different times in the estrous cycle.

There was no marked difference in breeding efficiency regardless of how the cows were treated, or whether they were bred naturally or artificially. Because of the severe inflammation produced, tyrothricin gave the poorest results. There was a slight advantage if animals were treated during or within 48 hours after estrus. (S. J. Roberts, D.V.M., New York), Cornell Vet., Jan. 1956.

A Method of Supporting Cropped Ears

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This method of supporting ears following cropping is a modification of a similar method learned from another veterinarian a few years ago.*

Materials needed for the procedure are: heavy chiropodist felt ($\frac{1}{8}$ in.), skin adherent, and sodium silicate for hardening the felt (fig. 1).

Following surgery, the inner surfaces of the ears are cleansed with ether to remove any remaining blood and fatty or other foreign material. Two pads (fig. 1) are cut from a roll of heavy chiropodist felt, the size depending on the age and size of the patient—a piece 2 by 3 inches is sufficient for small dogs, $2\frac{1}{2}$ by 4 inches for larger dogs. The pieces are tapered at one end to allow them to go down into the ear canal. A layer of adherent (skin adherent No. 2) is applied to the adhesive sides of the pads and the inner surfaces of the ears. It is imperative that the ears are

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Fig. 1—Materials used for supporting cropped ears of dogs are: (a) skin adhesive; (b) sodium silicate solution; and (c) chiropodist felt.



Fig. 2—After surgery the pads are applied to the dog's ears.

thoroughly cleaned and that hemorrhage is controlled or the proper bond will not be achieved.

A pad is then held cupped and placed on the inner surface of the ear (fig. 2), with the tapered surface placed down toward the ear canal. The pad is applied with very firm pressure. The procedure is repeated for the other ear.

Using a bandage scissors (fig. 3), the pad is trimmed to the shape of the ear. Next, the felt is saturated with sodium silicate solution (fig. 4) which can be purchased at a drugstore. Within one-half hour, the sodium silicate will have set, giving the felt a castlike hardness.

The pads are worn five to seven days and then are removed just like adhesive tape. In those cases where additional support is required, the process is repeated. With the above mentioned adherent, there seems to be no discomfort or irritation to the skin and when the pads need to be replaced, the patient can be discharged immediately after the pads are applied.

This method of support has been used on more than 250 dogs, ranging from 6 weeks to $1\frac{1}{2}$ years of age, and found to be advantageous because:

- 1) The animal can be discharged the day following surgery.
- 2) The suture line is exposed to the air.



Fig. 3—The pads are trimmed to the shape of the ears.



Fig. 4—Sodium silicate solution is applied to the pads.

eliminating "sweating," which is often seen when the ears are bandaged.

- 3) It requires less than three minutes to apply.
- 4) It is relatively inexpensive, costing

less than 10 cents for each pair of ears.

5) The ears are held firmly erect and in a normal position.

6) The pads can easily be removed and replaced when necessary.

Mink and Stilbestrol Feeding

That mink will not be affected by eating slaughterhouse by-products from animals fed diethylstilbestrol was indicated in a test. Their reproductive performances were not affected by rations containing up to 1.5 μ g. of the drug per animal per day.—*Farm Res., July, 1955.*

Bovine Vibrio Fetus in South Africa

Vibriosis, which is widespread in South Africa, is characterized by aberrations in the estrous cycle, lesions in the tubular genital organs, early absorption or early expulsion of the fetus, later abortions, weak or dead calves at full term, and retention of the fetal membranes. The agglutination test of serum is unreliable, but of vaginal mucus is more suitable. Organisms are found in smears from the stomach contents and from abomasal mucosa of fetuses.

Three to four months of sexual rest is recommended for affected cows. Treatment consists of a solution containing streptomycin (1 Gm.) and penicillin, (300,000 I.U.) infused into the uterus during estrus.—*Vet. Bull., Oct., 1955.*

Cesareotomy for Hydrops Amnii

A 6-year-old Aberdeen Angus cow developed hydrops amnii after about eight months of gestation. Because of increasing distress, cesareotomy was done through the right flank under local anesthesia with the cow in a standing position. To avoid shock, about 15 gallons of fluid was allowed to escape slowly before the uterus was incised. The operation was completed without removing the fetal membrane. The cow survived but the calf died when 3 days old.—*Iowa State Coll. Vet., 1956.*

Clinical Data

Radiographic Visualization of the Canine Prostate Gland

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Guelph, Ontario

THE POSITION and condition of the prostate gland can often be determined by rectal palpation. However, this form of examination is dependent on the size of the dog, the length of the clinician's finger, and the condition of the prostate.

These limitations and the observation of Schnelle¹ that rectal palpation of the prostate in a small dog is possible, "if the veterinarian has long fingers," led to an attempt to develop a radiographic technique as an aid in diagnosis where clinical evidence suggests that this might have some value.

It has also been noted that a normal prostate can usually be palpated rectally but that frequently an enlarged prostate will not be felt on palpation, as it tends to enlarge cranially and ventrally and may move away from the exploring finger.

From the Ontario Veterinary College, Guelph.

The authors are indebted to Mr. T. Gellatly for the photographic reproduction of the radiographs, and to Mrs. L. Guild for the drawings which accompany the radiographs.

The importance of a relatively accurate diagnostic procedure is emphasized by the work of Schlotthauer²⁻⁴ who found, at necropsy, that the prostate gland of 60 per cent of 120 dogs examined exhibited some type of lesion, usually hyperplasia. This finding has been substantiated by a number of other workers, a high percentage of dogs over 5 years of age having some degree of prostatic enlargement.

It is the purpose of this paper to present a radiographic technique for the visualization of the canine prostate which will aid in the confirmation or elimination of prostatic disease, and to demonstrate some of the changes that have been recognized by this technique.

Schnelle⁵ and others have demonstrated prostatic abnormalities in radiographs. Although a specific technique designed for this purpose has not been described, several workers^{6,7} have described satisfactory methods of visualizing the urinary tract. However, the nature and location of the

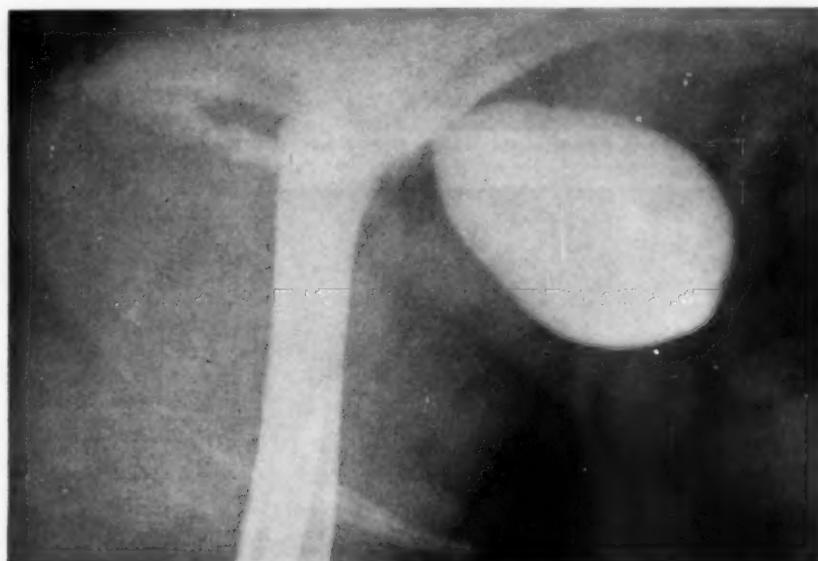
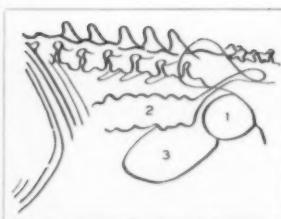
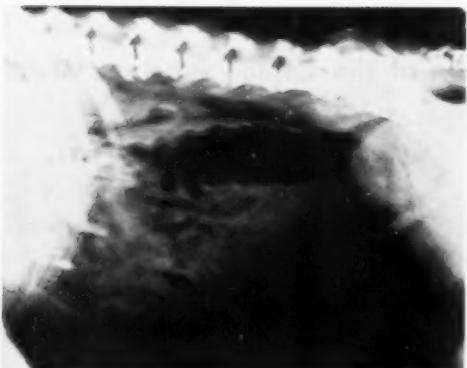
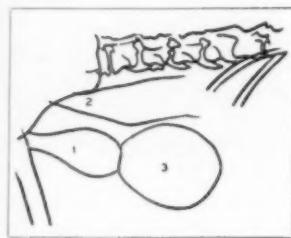
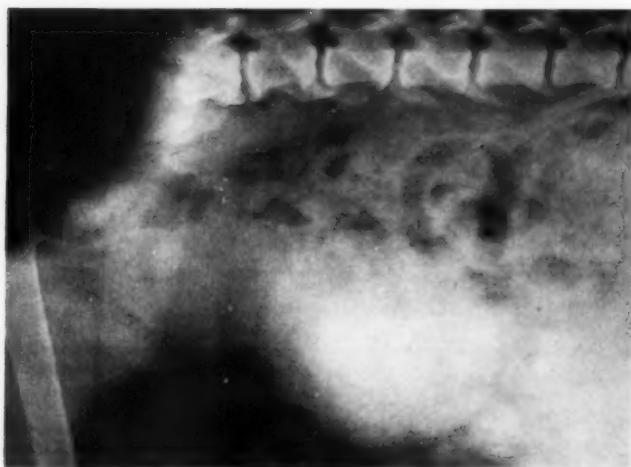


Fig. 1—A normal canine prostate gland. The bladder is outlined with radiopaque dye. The position of the neck of the bladder should be noted. The bladder wall is slightly thickened. The urethra is demonstrated by the dye-filled catheter.



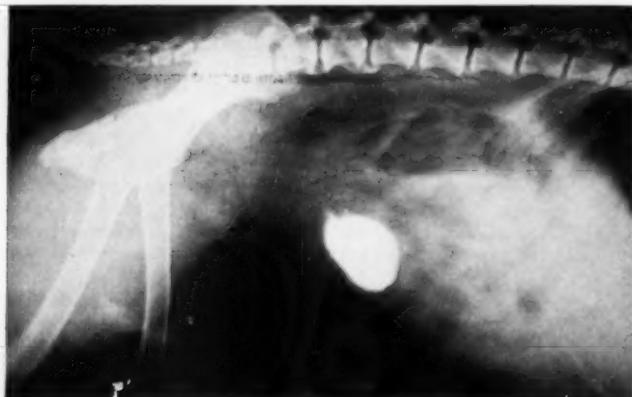
(1) Prostate; (2) gas-distended colon; (3) bladder.

Fig. 2—Radiograph and drawing showing a dense and enlarged prostate gland in a 4-year-old Collie. There is considerable gas distention of the colon with compression of the sigmoid flexure adjacent to the prostate.



(1) Prostate pelvis; (2) gas and feces in colon; (3) bladder.

Fig. 3—Radiograph and drawing of the bladder of an 8-year-old Chow apparently originating in the abdomen. The outline of the prostate gland is indistinct.



(1) Thickened bladder wall; (2) gas-filled colon; (3) dye-filled bladder.

Fig. 4—A cystogram and drawing of the Chow (same animal as in fig. 3) demonstrating the bladder with a very thick wall; one may infer that the prostate is considerably enlarged.



Fig. 5—The two structures in the bladder region were similar in shape, size, and density in the original films. The dye identifies the bladder. The prostate may be recognized behind it and the gas-filled colon above it. At surgery, the localizations of the prostate were found to have broken down and to have formed one large cyst in each lobe. The dog was a 3-year-old Pekingese. Note the catheter.

prostate impose certain limitations on such a method.

The prostate is a soft tissue structure adjacent to other soft tissue structures of similar density and in the normal state is almost completely obscured by the bones of the pelvis. Experiments have shown that the most satisfactory radiographs of the abnormal prostate are obtained with a lateral exposure. The normal prostate can seldom be seen in this view but almost all changes, in our experience, result in the prostate becoming visible cranial to the anterior border of the pubis. Normally, only the neck of the bladder can be distinguished at this point (fig. 1). However, when a prostate lesion is present, the neck of the bladder appears cranial to the border of the pubis (fig. 2) and the prostate may or may not be visible.

If the neck of the bladder appears to originate in the abdominal cavity anterior to the pubic border, it is usually an indication of prostate changes which have resulted in the true neck of the bladder being obscured and an apparent neck being visible anterior to the pubic crest.

The ventrodorsal view will occasionally show the prostate, especially if the lesions are of a type which cause increased density without enlargement, or even with shrinking. The prostate then becomes visible as a circular structure in the region of the pelvic inlet, usually adjacent to the pubic bones. The size may vary from 3 to 7 cm. in diameter. It is usually symmetrical and of an even density.

The lateral view of the prostatic region will usually provide opportunity for a tentative diagnosis. From time to time, how-

ever, a film will present a confusing picture of several structures of similar density and outline in the bladder and prostate area. The authors are not aware of any material which will be selectively taken up and thus outline the prostate gland. It has been found, however, that by introducing a radiopaque substance into the bladder, this structure may be recognized and adjacent structures identified. The procedure of outlining the bladder is called cystography.

RADIOGRAPHIC TECHNIQUE

The dog should be given an enema of warm water approximately 30 minutes before the examination and should be encouraged to evacuate as completely as possible since fecal impaction frequently accompanies prostatic enlargement.

Unless the animal is in distress, the bladder is not expressed or catheterized until the radiographs have been taken, as the urine-filled bladder is a useful landmark. The degree of distention of the bladder does not appear to affect the apparent position of the prostate.

The dog should be placed on its side with the central ray directed to the trochanter major when the femurs are at right angles to the spine. It is nearly always possible to palpate the trochanter and this should be done in order to identify it. The legs should not be forced or strained back as this tends to distort or obscure the prostate. It may be necessary to support the lower leg of the dog to ensure that the pelvis is in a true lateral position. Care should be taken to avoid rotating the pelvis.

The use of a Potter-Bucky diaphragm or stationary grid is desirable to absorb scattered radiation but this is not essential. A soft tissue or low kilovoltage technique should be employed to provide maximum contrast. Exposure factors which have been found satisfactory by the authors are: distance, 36 inches with a Potter-Bucky diaphragm, 50 ma./sec.; without a Potter-Bucky, a 15 ma./sec. fast film (Gaeveart curix) Patterson par-speed intensifying screens should be used. Average exposures are: Pekingese, 43 to 45 kv.p.; Cocker Spaniel 52 kv.p.; Boxer 55 to 60 kv.p.; Collie 52 to 55 kv.p.

TECHNIQUE FOR CYSTOGRAPHY

The instruments necessary for this procedure are: (1) a 50-cc. syringe, (2) a

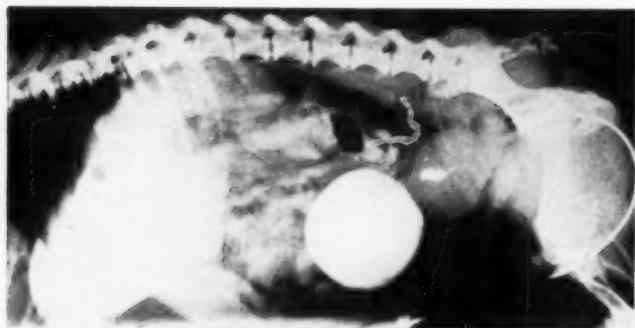
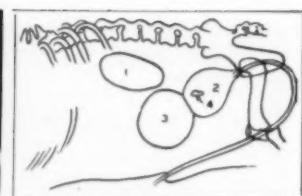


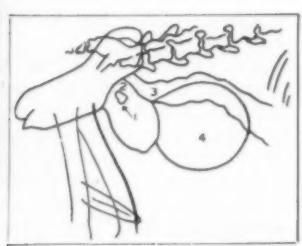
Fig. 6—This cystogram and drawing shows the bladder of an 11-year-old Dachshund carried well forward. Some dye is present in the prostatic urethra.



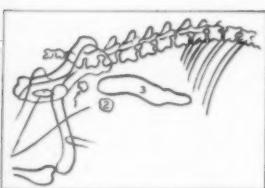
(1) Kidney; (2) prostate; (3) dye-filled bladder; (4) dye in prostatic urethra. Dye-filled catheter (lower right).



Fig. 7—Radiograph and drawing of a Carcinoma of the prostate gland in an 8-year-old Boston Terrier. Note the small group of calcified particles and the ragged outline of the ventral border of the prostate.



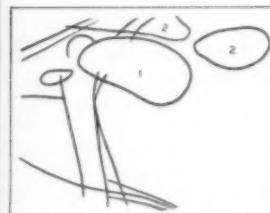
(1) Prostatic calculi; (2) prostate; (3) colon; (4) bladder.



(1) Prostatic calculi; (2) cystic calculi; (3) gas in colon.

—Dr. E. A. Matera, School of Veterinary Medicine,
University of São Paulo, Brazil

Fig. 8—Radiograph and drawing of prostatic calculus co-existent with a cystic calculus. No relationship between the two conditions could be discovered.



(1) Bladder; (2) gas in colon.

Fig. 9—Radiograph and drawing showing the appearance of the bladder of a dog two months after prostatectomy. The outline of the neck of the bladder is within the pelvic girdle.

16- to 18-gauge needle, 1½ to 2 inches long; (3) 100 cc. of distilled water; (4) 10 Gm. of hippuran (mallinckrodt®); (5) a catheter of a suitable size for the patient; and (6) some lubricant for the catheter.

To prevent leaking of the dye from the syringe, it is necessary that the catheter fit the needle. If no suitable needle is available the end of the catheter will often fit the tip of the syringe. The instruments should be sterilized.

Hippuran, 10 Gm., is dissolved in 50 cc. of warm, distilled water and drawn into the syringe. This provides a 20 per cent concentration which is a little higher than some workers recommend, but there is an advantage in having a higher concentration so that adequate contrast is retained when the dye is diluted with urine.

With the dog on its side, the catheter should be carefully introduced. This appears to be most easily achieved with the stilette still in the catheter. The most favorable position for the catheter seems to be with the tip just visible, cranial to the pelvis. If the catheter is inserted too far, damage to the bladder wall may result and no information about the prostatic urethra will be obtained. The position of the tip of the catheter may be checked by a radiograph or by fluoroscopy, the metal of the stilette providing adequate contrast. Care should be taken also to insure that the stilette does not penetrate the catheter tip as the damage caused may result in difficulty in introducing the catheter. With the catheter satisfactorily placed, the stilette is withdrawn and the syringe is attached. If working with fluoroscopy, the injection may now be made and observed but ade-

quate precautions must be taken to protect the hands of the person making the injection. It has been found that by placing a sheet of lead or lead rubber under the hand of the person (the x-ray tube is below the table for horizontal fluoroscopy) and by wearing lead gloves, adequate protection for this procedure is given. The fluoroscopic shutters should be closed as far as possible and protective clothing worn by all observing the examination. The injection should be made slowly. The dye will be seen to mix with the urine, and the dye and urine will outline the bladder.

It has been found useful to retain about 10 cc. of dye in the syringe so that when films are taken some dye may be injected and will be seen in the prostatic urethra. If all the dye is injected before films are taken, all of it may enter the bladder. Care should be taken to protect the hand making the injection during the exposure, by moving to the limit of the catheter and wearing a protective leaded glove.

If fluoroscopic facilities or adequate protective devices are not available, the injection should be made and lateral films taken as already described. It has been our practice to take lateral films either during or at the conclusion of fluoroscopy to provide permanent records of what has been observed.

After the lateral film has been obtained, the dog may be positioned on its back with the central ray directed to the midpoint on a line between the greater trochanters and ventrodorsal films obtained.

The x-ray technique found satisfactory for the straight films will usually be satisfactory for the cystogram. However, since

the contrast medium is replacing the natural difference in density of adjacent structures, higher kilovoltage can be tolerated if desirable. The writers sometimes increase the exposure 2 to 3 kv.p. to lessen confusing, soft tissue shadows.

It has been our experience that the dog is more comfortable and that less mess occurs in the x-ray room if, at the completion of the examination, the catheter is inserted a little further and some dye and urine are withdrawn.

It should be borne in mind that a final decision as to the exact condition present can seldom be made from the radiograph. Clinical observations and an adequate history are essential but the final decision can often be made only by the surgeon or pathologist. Sufficient evidence can usually be provided by the radiologist, however, to guide the surgeon with regard to the size, extent, and location of the lesion and can often give a rough classification of the type of condition present.

RADIOGRAPHIC DIAGNOSIS

It is assumed by the authors that when the neck of the bladder appears to emerge from the pelvis, as demonstrated by the cystogram in figure 1, the prostate is normal.

Three main types of change in the prostate have been found radiographically that coincide with differing pathological types when inspected surgically.

The most commonly encountered change is that of slight enlargement but with considerable increase in density, suggesting fibrous changes in the prostate (fig. 2).

In the next most common change, the bladder appears to originate at some distance from the pelvis and the prostate may or may not be visible. It is useful to carry out a cystogram on these animals (fig. 3 and 4).

In the least common type, there appear to be two bladders or two masses in the prostate-bladder region. To demonstrate which is prostate, bladder, or tumor, a cystogram is essential (fig. 5 and 6).

It would appear from our experience with a limited number of cases, that when the gross outline of the prostate is smooth, the changes are probably benign; when the gross outline is ragged or irregular, the changes may be malignant (fig. 7).

Other changes which have been observed are prostatic calculi (fig. 7 and 8). Usually

the prostate is somewhat enlarged and the calculi are visible as a cluster of small areas of increased density about the size of small gravel. One case of prostatic calculi has been seen where cystic calculi were also present but no connection is suggested between the two conditions (fig. 8).

Cystograms have been carried out on all dogs on which prostatectomies have been performed and the picture, as we might expect from the surgical technique, does not show the normal tapered neck of the bladder (fig. 9).

SUMMARY

The prostate gland, from the standpoint of radiological visualization, is described and briefly discussed. Techniques for radiography and cystography are described. The main types of change encountered by the authors are described and illustrated.

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Antileptospiral Agent in Milk

While leptospirosis is prevalent in man and animals in many countries, no milk-borne infections have been reported. In New Zealand where cattle and swine are the predominate source of the infection in man (in other parts of the world, it is usually rodents), it was found that undiluted milk rapidly killed Leptospira. In a study of the milk of 100 cows, 10 goats, and 30 samples of human milk, the anti-leptospiral principle was found mainly associated with casein. In whey, the titer was much lower. This could explain the absence of milk-borne infections.—*J. Am. M.A.*, Feb. 4, 1956.

Erythrocyte and Hemoglobin Studies in Thoroughbred Racing Horses

H. C. BRENON, Ph.D.

Inglewood, California

THIS LABORATORY has been engaged for the past five years in performing clinical laboratory work for the veterinarians licensed to practice at California race tracks.

Since all of these men are primarily responsible for adjudicating the fitness, condition, and medical well-being of all of the Thoroughbred racers under their care, they routinely make it a habit to study the blood picture of normal horses that come under their care and supervision in order to substantiate their clinical opinions of the animals.

In the course of this work, the question of what constitutes the "normal" for Thoroughbred racers came up many times. A "normal" figure appeared to be essential if the track veterinarian was to properly evaluate laboratory findings which were at great variance in various locations. There also appeared to be a wide difference of opinion in this respect in the literature and among the research workers who had done previous work on the subject.

It soon became apparent that, although there had been many competent studies made of the hematological picture of the horse as a species, no specialized study had been made of any particular breed.

We, therefore, undertook a study of 207 normal racing Thoroughbreds without regard to age or sex in order to arrive at an average mean figure that might be used as a "normal" criterion for this breed of horse under particular circumstances of stress and periodical maximum effort found only under racing conditions. Hence, all blood samples were taken for study from Thoroughbred racing horses working at Hollywood Park, Inglewood, Calif.

Standards of hematological technique were adopted as follows:

From the Brenon Laboratory, Inglewood, Calif.

The author expresses his sincere appreciation for the help given him by Drs. B. J. Errington, E. W. George, A. H. Edmondson, J. K. Robbins, and N. C. Roberts, all of whom made it possible for him to obtain proper specimens for study; and to J. R. Malivius, racing secretary at Hollywood Park, and Leon Rasmussen, of the Daily Racing Form, who assisted him in obtaining the racing records of all of the Thoroughbreds studied.

1) Specimens were taken when the subject was at rest;

2) Fresh specimens were introduced into a vial containing 1 drop of 1.5 per cent lithium oxalate per milliliter of blood;

3) Specimens were well mixed when obtained and again at the laboratory where aliquots were taken for erythrocyte counts, hemoglobin, and hematocrit studies;

4) The standard direct count was made on a Spencer bright line hemacytometer, using Hayem's solution as a diluent;

5) The hemoglobin was evaluated by the 30-minute acid hematin method on a Klett-Summerson photocalorimeter calibrated by the Wong method for iron content and standardized to 15.6 Gm. as 100 per cent;

6) The Wintrobe hematocrit method was used in order to obtain the packed cell volume;

7) All counts were completed within three hours after the specimens arrived at the laboratory;

8) All Thoroughbreds were reported, by the veterinarians taking the samples, to be normal clinically. They, likewise, substantiated the fact that the blood study was being performed only to ascertain general fitness and *not* to aid in the diagnosis of any disease or dyscrasia.

Our main reason for adopting some of the factors in the technique outlined above was that Holman¹ reported in his study that the erythrocyte count in an excited horse may vary from 1 to 2 million per cubic centimeter of specimen in a few seconds. Therefore, taking specimens just before or immediately after a race would affect the norm drastically. The environmental and tempermental conditions existing during the taking of the specimen for study also would have a marked effect upon the final blood study.

The variables in the hemoglobin percentages in other parts of the nation should also be kept in mind. This report is based on 15.6 Gm. as being 100 per cent while Illinois used 16.0 Gm. as 100 per cent, and Wintrobe reports two figures of 14.5 and 15.0 Gm., respectively.

In order that various areas may adjust their percentage readings to conform with their own locality, we shall report our hemoglobin figures in grams per 100 cc. of whole blood only.

RESULTS

For all the 207 horses tested, the average mean erythrocyte count was 6.8 million (6.798) per cubic millimeter of whole blood; the average mean hemoglobin concentration was 13.7 Gm. (13.721) per 100 cc. of whole blood; the extremes being 13.2 and 3.7 million erythrocytes and 15.9 and 10.2 Gm. of hemoglobin, respectively. As a basis for extreme comparison, the readings on 2 of the lowest Thoroughbred racers ever to have been seen in this laboratory were: erythrocytes 1.95 and 2.7 million, and hemoglobin 4.3 and 6.9 Gm./100 cc. of whole blood. However, these were diagnosed as sick animals and were not included as a part of this study.

In order to remove as far as possible the factor of human error so often seen in making the direct blood count, all of the readings were checked simultaneously with a packed cell volume (PCV) procedure. The average was determined to be 43.4 mm. and checked with the mean when comparing human with equine ratios in respect to cell size. Normally, 5 million human erythrocytes measuring 7.7μ on the average show a mean PCV of 44.0 mm. Therefore, 6.75 million equine erythrocytes measuring 5.7μ on the average would show an average PCV of 43.0 mm.

Craig² reported 7.2 million erythrocytes as an extreme mean for *all* horses. This figure was later revised by Coffin³ to 7.95 million. Scarborough⁴ gave 7.8 million as the average normal for *all* horses. Further, it is of interest that Gradwohl⁵ gave his normal figures with a division as to sex, *i.e.*: stallions 7 to 10 million (ave. 8.0); geldings 5.5 to 9.0 million (ave. 7.25); mares 5.5 to 7.5 million (ave. 6.5). This last report was also for *all* types of horses and indicates an over-all average of 7.25 million.

The deviation (table 1) between our figures and those found in the standard literature may be due to such factors as: (1) the variance in technique and environment; (2) we were dealing with a particular breed of horse working under extreme physiological conditions and disregarded sex as a factor; and (3) most horses which have been under study in the past have not been worked daily as one would find in the Thoroughbred on the race track.

Here, there is very little time off for the animal, and the result is that the blood

TABLE 1—Comparison of Erythrocyte and Hemoglobin Figures for Horses

	Our laboratory	Craig	Coffin	Borough	Gradwohl
Erythrocytes (million/cmm.)	6.80	7.20	7.95	7.80	7.25
Hemoglobin (Gm./100 cc.)	13.7	13.5	13.9	—	—
Packed cell volume	43.4	—	37.0	—	—

count may tend to stabilize at a certain point and remain there as long as the horse is at its racing peak. It has been demonstrated by various stable owners, who also have breeding farms, that race horses retired to the farm for a rest period develop high counts, but when they return to the daily race training routine at the tracks their erythrocyte count tends to decrease. Again it may be that, since our figures include more racing fillies and mares than stallions or geldings, our norms would be above the standards set if such a division had been made. Gradwohl points out the normal deviation in respect to sex. However, this was not done since the purpose of our work was to arrive at an overall working standard rather than an effort at pure research.

We have studied the racing record of the 10 highest and 10 lowest horses at Hollywood Park just before and after the time that the specimens were taken so as to determine the effect, if any, on the racing ability of Thoroughbreds having a blood count above or below our mean normal figure.

This limited study would seem to indicate that a high blood count may be a factor in running ability, as the 6 horses shown in table 2 were all in the top 10; other horses in both the highest and lowest 10 either ran out of the money during the time under study or were not entered in any race. This last stated fact also was true of all the other horses that were studied at Hollywood Park during the time the specimens were taken. One must, however,

TABLE 2—Erythrocyte Counts for Racing Thoroughbreds

Horse (No.)	Erythrocytes (million/cmm.)	Win	Place	Show
1	13.2	1	1	1
2	12.2	1	1	0
4	11.9	0	1	0
5	11.8	0	0	1
6	11.7	1	0	0
8	10.0	2	1	1

take into consideration all the other factors involved in racing before attempting to establish the true value of the blood picture in Thoroughbred racing.

If nothing else, in our opinion this indicates an index of the stamina and physical condition of the animal during the time of study and should be of great value to the owner or trainer if he is attempting to race his horse *only* when it is at its physical peak.

All of the ten lowest erythrocyte counts were below 6.2 million (the average was 6.8 million) and, although none of these animals were clinically sick, they might have been in a subclinical condition of illness to such an extent as to lower the horses' racing ability. This was only demonstrated by the blood count and would not have been noticed had this procedure not been performed. It appears, therefore, that the blood study of the racing Thoroughbred is of value to the trainer.

SUMMARY

1) A study of the erythrocyte count and hemoglobin concentration of 207 clinically normal racing Thoroughbred horses has been made.

2) The average mean normal erythrocyte count was 6.8 million per cubic centimeter of whole blood, disregarding age and sex.

3) The average mean normal hemoglobin concentration was 13.7 Gm./100 cc. of whole blood, disregarding age and sex.

4) Any erythrocyte count below 6.3 million appears to point to a subclinical dyscrasia affecting the horse's racing ability, since all of the horses having counts below this figure either ran out of the money or were not raced during the period under test.

5) A routine study of the erythrocyte count and the hemoglobin concentration of all racing Thoroughbreds is indicated as part of the routine clinical care and advice offered by the track's veterinarians.

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Equine "Wobblers"

This condition, found only in young horses, is so named because the animal has poor coordination, travels "base-wide" to maintain his balance, overextends his legs, has a tendency to cross the rear ones when galloping, and has difficulty in backing. It does not lose sensory perception or muscle strength. The condition results from the intervertebral discs, usually the third or fourth cervical, slipping out of place and causing pressure lesions in the white matter of the spinal cord. While the cause is unknown, it may be the result of nutritional deficiency, or of abnormal cartilages. Treatment is usually not successful.—Col. T. C. Jones, D.V.M., in *The Blood Horse*, Dec. 3, 1955.

Antibiotics for Sinusitis in Man

When 106 patients with maxillary sinusitis were given oxytetracycline for five days (total 4 Gm.) and re-examined the eighth day, 78.3 per cent were symptom-free and 72.6 per cent showed no signs on a radiograph. Of 102 similar patients given 450,000 units of procaine penicillin daily for five days, 30.0 per cent were symptom-free on the eighth day and 26.5 per cent showed no signs in radiographs. Maxillary puncture revealed secretion in the sinus of 16 per cent of the former and 48 per cent of the latter group. Penicillin produced no side-effects while oxytetracycline caused eczema in 6.7 per cent, diarrhea in 34.9 per cent.—*Antibiotic Med.*, Jan., 1956.

Parakeratosis in Pigs

Recent work strongly supports the belief that zinc is effective in preventing parakeratosis in swine and that excessive levels of calcium (1% or more of the ration) increases the incidence of the disorder. The level of zinc required varies directly with the calcium level. Under normal conditions, 50 p.p.m. of added zinc appears to be adequate.

Questions such as possible antagonisms between zinc and copper, differences in the availability of zinc from natural sources, and difference in breed susceptibility, have not been fully explored.—*Proc. Am. Feed Mfr. A.*, Nov. 27, 1955.

The Comparative Value of SMP-1 and Crystalline Penicillin G for the Treatment of Chronic Streptococcal and Staphylococcal Mastitis of Cattle

JOSEPH SIMON, D.V.M., Ph.D., and PHILLIP REESE

Madison, Wisconsin

SMP-1®* is essentially chloromycetin with a p-methylsulfonyl group substituted for the p-nitro group. It is a stable, crystalline synthetic compound which is represented by the following formula:

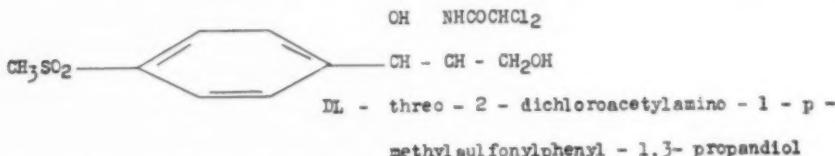


Fig. 1.—The chemical formula for SMP-1.

SMP-1¹ was found to have antibacterial activity *in vitro* against a variety of gram-negative and gram-positive organisms. The minimum inhibitory concentration ($\mu\text{g./ml.}$) for two strains of *Micrococcus pyogenes* var. *aureus* was 6.3 and 12.5, respectively. One strain of *Streptococcus agalactiae* and two strains of *Streptococcus pyogenes* were inhibited by a minimum concentration of 6.25 $\mu\text{g.}$ per milliliter.

This study was undertaken in an effort to evaluate the therapeutic effectiveness of SMP-1 in mastitis caused by *Str. agalactiae* and the hemolytic coagulase-positive micrococci, staphylococci.

METHOD AND RESULTS

The 11 experimental herds used for the field trials were located in the immediate area of Madison, Wis. The procedures used in diagnosing an infection caused by *Str. agalactiae* and the criteria which were established as a basis of recovery were the

From the Department of Veterinary Science, University of Wisconsin (Simon) and the Madison Milk Producers Association (Reese), Madison.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station as paper NS 192 from the Department of Veterinary Science, University of Wisconsin, Madison.

This work was supported in part by a grant of funds from Grasselli Chemicals Department, E. I. DuPont de Nemours Co., Wilmington, Del.

*SMP-1 is produced by E. I. DuPont de Nemours Co., Wilmington, Del.

same as described by Simon *et al.*² Confirmation of quarters which were shedding group C streptococci was established by Lancefield's³ precipitin technique. Quarters which were shedding hemolytic coagulase-

positive staphylococci were presumed to be infected and were selected for therapeutic trial. The testing procedures for the diagnosis of staphylococcal mastitis in general were the same as described.²

Hemolytic colonies were cut with a hot loop from the blood agar and placed in tubes of nutrient broth. These tubes were incubated at 37°C. for 24 hours and 0.1 ml. of the broth was then added to 0.5 ml. of a 1:5 dilution of sterile citrated rabbit plasma. After incubation at 37°C. for three hours, they were checked for coagulase activity. Those tubes which contained a distinct coagulum were construed as being coagulase-positive. Any culture which demonstrated slight or equivocal coagulase activity was considered negative and the particular quarter of the mammary gland shedding the organisms comprising this culture was not subjected to therapy trial.

The quarters to be treated by each medicament were selected at random.

Experiment 1.—A comparison was made of treatment for mastitis caused by *Str. agalactiae* with a single infusion of 0.5 Gm. of SMP-1 and with crystalline penicillin.

The quarters of group A were treated with 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicile,®

Penicile is a trademarked product of Wallace Laboratories, Inc., New York, N. Y.

water-in-oil type vehicle, while group B quarters received 0.5 Gm. of SMP-1 in peanut oil.

Statistical evaluation of experiment 1 (table 1) indicates that 100,000 units of

TABLE I—Results of Treatment of Bovine Mastitis with Penicillin (Group A) and SMP-1 (Group B)

Group	Quarters treated		Quarters freed of infection (%)
	(No.)	(No.)	
EXPERIMENT 1			
A	76	61	80.3
B	86	52	60.5
EXPERIMENT 2			
A	25	19	76.0
B	24	17	70.8
EXPERIMENT 3			
A	39	26	66.7
B	44	21	47.7

crystalline penicillin G potassium salt in 10 ml. of penile was a more effective therapeutic agent for mastitis caused by *Str. agalactiae* than 0.5 Gm. of SMP-1 in peanut oil (*chi-square* = 7.495).

Experiment 2.—A comparison was made of treatment of mastitis, caused by group C streptococci, with a single infusion of 0.5 Gm. of SMP-1 or with crystalline penicillin.

The quarters of group A were treated with 200,000 units of crystalline penicillin G potassium salt in 10 ml. of penile, a water-in-oil type vehicle; group B quarters received 0.5 Gm. of SMP-1 in peanut oil.

While the data of experiment 2 (table 1) are limited the statistical evaluation indicates that 0.5 Gm. of SMP-1 in peanut oil may be as effective a therapeutic agent for mastitis caused by group C streptococci as 200,000 units of crystalline penicillin G potassium salt in 10 ml. of penile (*chi-square* = 0.168).

Experiment 3.—A comparison was made of treatment of mastitis caused by hemolytic coagulase positive staphylococci with a single infusion of 1 Gm. SMP-1 and with crystalline penicillin.

The quarters of group A received 500,000 units of crystalline penicillin G potassium salt in 10 ml. of penile; group B quarters received 1.0 Gm. of SMP-1 compound in peanut oil.

Chi-square analysis of the data of experiment 3 (table 1) indicates that treatment with 500,000 units of crystalline penicillin G potassium salt in 10 ml. of penile was not significantly more effective than 1.0 Gm. of SMP-1 compound in peanut oil for mastitis attributed to hemolytic coagu-

lase-positive staphylococci (*chi-square* = 3.019).

DISCUSSION

The results of experiment 1 revealed that a single infusion of 0.5 Gm. of SMP-1 compound in peanut oil under the prevailing conditions was inferior to 100,000 units of crystalline penicillin G potassium salt in an oil-retention vehicle for mastitis caused by *Str. agalactiae*.

The results of experiment 2 suggested that a single infusion of 0.5 Gm. of SMP-1 compound in peanut oil was as effective, therapeutically, as 200,000 units of crystalline penicillin G potassium salt in 10 ml. of penile for mastitis caused by group C streptococci.

During the past three years, the prevalence of mastitis caused by *Str. agalactiae* has apparently diminished in this area whereas that attributable to hemolytic coagulase-positive staphylococci has increased. Since therapeutic efforts against staphylococci are uncertain, experiment 3 was designed to evaluate a relatively high dosage of penicillin and 1.0 Gm. of SMP-1. There was a considerable difference between the two medicaments on a percentage basis but it was not statistically significant.

SUMMARY

1) One-half gram of SMP-1, a chloromycin analogue, in peanut oil was inferior under prevailing field conditions to 100,000 units of crystalline penicillin G potassium salt in the treatment of mastitis caused by *Streptococcus agalactiae*.

2) With a limited amount of data, 0.5 Gm. of SMP-1 appeared to be as effective as 200,000 units of crystalline penicillin for group C streptococcal mastitis.

3) Statistically, 1.0 Gm. of SMP-1 may be as effective as 500,000 units of crystalline penicillin for mastitis attributed to hemolytic coagulase-positive micrococci, staphylococci.

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¹Woodhouse, C. A.: Personal communication, 1953.

²Simon, J., and Schmidt, E. G.: The Therapeutic Efficiency of Furacin and Furacin-Pencillin Mixture for Mastitis Caused by *Streptococcus Agalactiae*. J.A.V.M.A., 121, (1952): 467-468.

³Lancefield, R. C.: A Serological Differentiation of Specific Types of Bovine Hemolytic Streptococci (Group B). J. Exptl. Med., 59, (1934): 441-459.

Infectious Rhinotracheitis in Feedlot Cattle

III. An Epizootiological Study in a Feedlot

T. L. CHOW, B.V.S., Ph.D.; J. L. PALOTAY, D.V.M.; A. W. DEEM, M.S., D.V.M.

Fort Collins, Colorado

INFECTIOUS rhinotracheitis of cattle is a respiratory infection involving, primarily, the nasal passages, the larynx, and the trachea, with occasional extension into the bronchi. It was observed by veterinarians in northeastern Colorado as early as 1950 and recognized as a new and different clinical entity of feedlot cattle, with occasional cases appearing in dairy herds. The incidence of this infection has increased. In 1954 and 1955, it assumed epizootic proportions which resulted in a heavy economic loss to cattle feeders.

Clinical, pathological, and reproduction studies have been reported by Miller,¹ Jensen *et al.*,² and Chow *et al.*³

This report is a one-year study of the epizootiology of rhinotracheitis in a feedlot which fattens 25,000 to 30,000 cattle annually. Since this was a year-round operation, there was a continuous turnover of cattle, with 12,000 to 18,000 being on the premises at all times.

The first few isolated cases in this particular feedlot occurred early in 1953. The disease gained impetus from then on. From April, 1954, to March, 1955, 3,204 clinical cases were diagnosed, of which 203 had fatal termination. The morbidity was approximately 10.6 per cent and of these 6.3 per cent died.

In this feedlot, cattle were confined in pens holding 200 to 400 animals. Pens were separated either by a pole fence or an alley. Watering facilities were so constructed that two pens shared a common water tank.

During the period covered by this report, the disease followed no definite progressive pattern. In some pens, most or all of the cattle became infected, while in others only a few animals were affected at one time. In other pens, sporadic cases oc-

curred throughout the feeding period. The reaction in groups or pens of cattle varied considerably.

The method, or methods, of transmission from one pen to another was highly speculative. Each day personnel entered each pen on horseback to check for and remove sick animals. Periodically, trucks entered each pen to distribute salt, repair pens, etc. For most pens, feed was delivered to outside feed bunks while in a few of the smaller lots feeding was done in inside bunks, necessitating daily entry of trucks. Periodically, some pens of cattle were moved to new locations within the feedlot as a part of the flow pattern in the fattening process. No relationship was apparent between the movement of cattle, wind direction, and spread of the disease. Birds were observed frequently in the feedlot. Further study of the possibility of transmission by birds is being planned.

In this feedlot, the transmission of infection between pens or within pens was not extensive, but continuous, although in certain months it was higher than in others (chart 1).

COURSE OF THE DISEASE

The clinical course of rhinotracheitis in cattle being treated in most cases was relatively short, usually from three to six days, although variations ranged from one day to more than three weeks (chart 2). Of 2,681 cases studied, 1,296 (48%) had a clinical duration of four days, and 2,240 (83%) had a duration of three to six days.

The cases of extremely short duration may have escaped diagnosis during early stages of the disease, while most cases of extremely long duration were probably complicated by bronchopneumonia or diphtheria.

INCUBATION PERIOD

The incubation period of rhinotracheitis under natural conditions is unknown. Animals generally did not contract the disease until they had been on full feed for a con-

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This study was supported in part by a grant from Swift & Co., Chicago.

The authors are indebted to Mr. Warren H. Monfort for supplying the records.

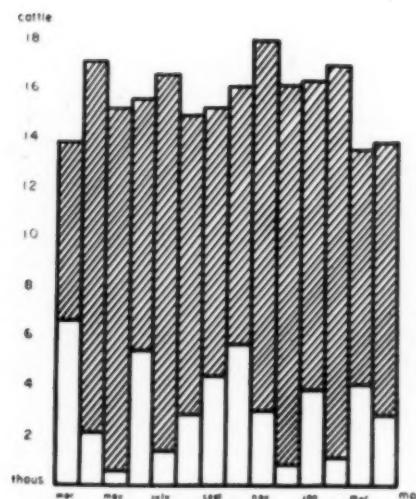


Chart 1 (Left)—The incidence of rhinotracheitis in feedlot cattle.
(Left)—The shaded columns are total cattle in feedlots; the unshaded columns indicate cattle introduced monthly into the feedlots.

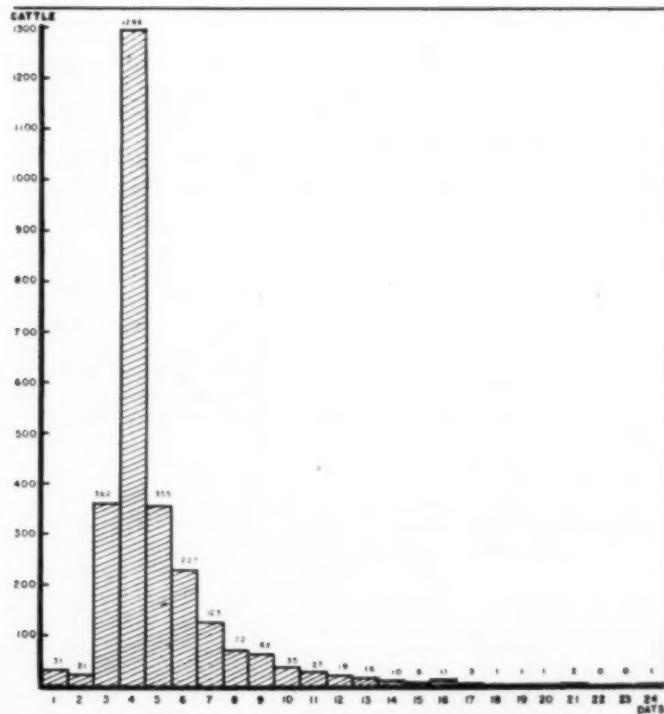


Chart 2—The clinical course of rhinotracheitis in feedlot cattle (2,681 cases.)

siderable time. Of the 2,636 cases studied (chart 3) in this feedlot, all had been on full feed for periods ranging from ten to 150 days. The majority (82%) contracted the disease after being fed for 20 to 60 days; 55 per cent after 26 to 42 days.

Although newly purchased animals were added to the feedlot at frequent intervals (chart 1), rhinotracheitis usually did not develop until they had been on full feed for considerable time. Whether this period on feed was the true incubation period, or whether the fattening ration affected susceptibility, is unknown.

It was of interest that in a herd of more than 200 breeding cows maintained adjacent to the feedlot, none of the cows showed clinical evidence of infection. Whether the fattening process affects susceptibility requires careful investigation.

SEASONAL INCIDENCE

The early observations on rhinotracheitis, before it became widespread, indicated that it was markedly seasonal, occurring primarily during late fall and early winter. During that season, in northeastern Colorado, the weather was cold, dry, and windy. It was believed that dust in the air was an important factor in the development of the disease. With further study, this opinion was modified, since the disease occurred under all climatic conditions. As indicated in chart 1, it was most prevalent in May, July, October, and November.

Although there was some variation in

the numbers of cattle in this feedlot in different seasons, there was no definite correlation between cattle population and disease incidence. However, there may be some relationship between the number of cattle introduced monthly and the later prevalence of rhinotracheitis (chart 1).

SUSCEPTIBILITY

This study showed no difference in susceptibility for breed, sex, or age. Since all the cattle fed in this lot were relatively young, the age variation was limited, and no information was obtained concerning the susceptibility of younger calves or mature cattle.

A record was made of the body weights at the onset of infection. As indicated (chart 4), the cattle which became infected had gained approximately 100 lb. before infection occurred. This suggested an incubation period of 30 to 40 days during which normal gains were made; or it may have indicated that a certain plane of nutrition was a necessary predisposing factor in the development of clinical infection. There was some corroborative evidence for the latter hypothesis since the disease rarely appeared in range cattle on pasture when exposed nor in young feeder cattle until they had been on full feed for considerable time.

There was no significant difference in the susceptibility of cattle from different geographic areas.

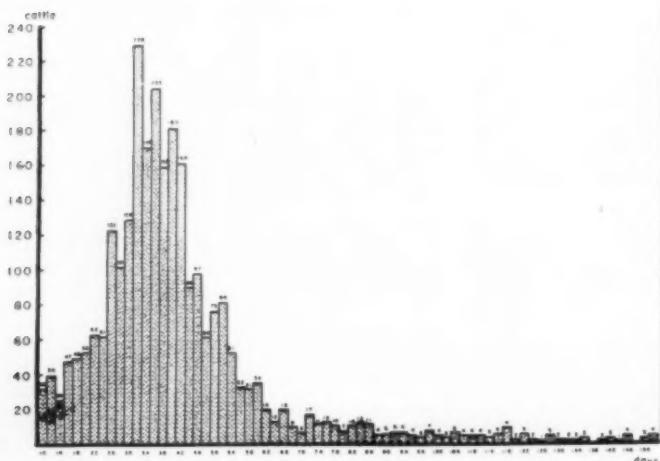
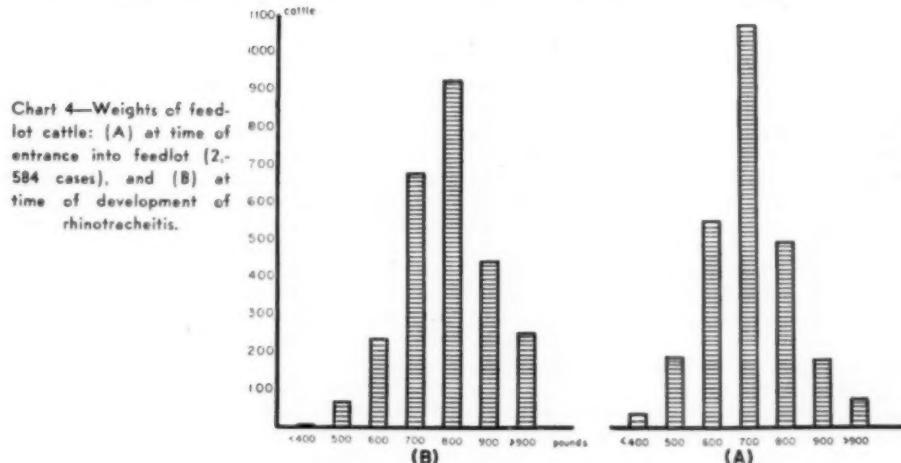


Chart 3—The occurrence of rhinotracheitis in feedlot cattle in relation to number of days on feed (2,636 cases).



DISCUSSION

The management and rations in the pens, holding 200 to 400 animals each, were uniform in all seasons. The traffic of animals in this feedlot was heavy and the turnover of the cattle population was rapid. It was difficult to explain why the disease appeared in some feedlots and not in others. Many factors were involved, such as the movement of cattle into and out of lots and the movement of feed and supplies. Animate vectors such as birds, insects, human attendants, and visitors were considered in attempting to determine the method of transmission.

In comparison with many other feedlots, the morbidity in this study was low and the mortality high. This may have been because only the obviously sick animals were separated from the pens for treatment, while many milder cases probably were not noticed. Animals were not listed as sick unless they were delivered to the hospital pens for treatment.

SUMMARY

In a Colorado feedlot containing 12,000 to 18,000 cattle, feeding 25,000 to 30,000 annually, 3,204 clinical cases of rhinotracheitis were diagnosed, a morbidity of 10.6 per cent. Of these, 203 died, a mortality (case fatality) of 6.3 per cent. About 48 per cent of infected animals had a clinical course lasting four days, with 83 per cent lasting three to seven days.

The incubation period under natural

feedlot conditions is unknown but infection was evident only after ten to 150 days in the feedlot; 55 per cent after 26 to 42 days. This may indicate that the plane of nutrition is a predisposing factor.

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- Chow, T. L., Deem, A. W., and Jensen, Rue: Infectious Rhinotracheitis in Cattle. II. Transmission Studies of Rhinotracheitis. Proc. U. S. Livestock San. A., 1955.

Drug Action and Avian PPLO

The inhibiting effect of 12 drugs was tested, *in vitro*, on the growth of a strain of PPLO isolated from a chicken with chronic respiratory disease. Four sulfonamides were inactive while the other drugs were rated in the order of diminishing activity as follows: (a) magnamycin®; (b) terramycin®, streptomycin, or furazolidone; (c) aureomycin® or chloromycetin®; (d) neomycin; and (e) penicillin. The first four agents would kill PPLO.—*Poult. Sci.*, Nov., 1955.

Antibiotics Injurious to Animals.—That the feeding of antibiotics to pigs and birds hastens senility and shortens the life of the animals was reported at the Academy of Sciences in France.—*J.A.M.A.*, Feb. 18, 1956.

Investigations on Current Hog Cholera Problems

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POSTVACCINATION problems are among the most costly and disturbing incidents experienced by the commercial firms engaged in developing and standardizing improved immunization products as well as by the practicing veterinarians, and swine producers. Continued studies and researches have been conducted in this field primarily because of the interest and encouragement as well as the support of the member companies of the Associated Veterinary Laboratories, Inc.

It appears that, in Iowa, there has been a considerable reduction in the occurrence of hog cholera and of postvaccination problems associated with this disease during the past two years. According to the annual reports of the Iowa State Diagnostic Laboratory, the total number of cases in which hog cholera was involved is as follows: 1953, 330 cases; 1954, 200 cases; and in the first 7 months of 1955, 60 cases.

During 1955, an accurate diagnosis of hog cholera was considered to be difficult to make in many instances because of (a) the number of cases involving cholera virus strains of low pathogenicity, and (b) the increase in the incidence of swine enterotoxemia (edema disease) accompanied by hemorrhagic lesions commonly associated with a septicemia. These lesions are confusing to the diagnostician, so animal inoculations as well as immunity tests are required for diagnostic confirmation.

The studies of postvaccination problems in this report include those requested by veterinarians, confirmation of diagnoses made by the Iowa State Diagnostic Laboratory, and problems involving biological production covering the period from Sept. 1, 1954, to Sept. 1, 1955. The laboratory techniques, including swine inoculations, customarily employed for the isolation of the virus from field cases were used after screening for pathogenic agents other than hog cholera virus by culture mediums and inoculation of laboratory animals.

A summary of these studies will be pre-

From the Veterinary Medical Research Institute, Iowa State College, Ames.

These investigations were supported in part by grants from the Associated Veterinary Laboratories, Inc.

sented rather than a detailed technical report on the individual cases studied in our laboratories. Of the 26 postvaccination problems, hog cholera virus was isolated from 19 herds, 5 of which had been vaccinated with commercial virus and serum and 14 with the various vaccines. Since we do not have accurate information regarding the number of swine herds in this area which have been vaccinated with serum and virus and those vaccinated with the various vaccines, these figures do not in any way reflect on the relative efficiency of the various methods of vaccination.

The histories of the herds were incomplete in some instances, making it impossible to classify the unfavorable reactions in reference to the time interval elapsing subsequent to vaccination. However, while the majority of them occurred in less than 14 days, they ranged from three to 288 days after vaccination.

ISOLATION OF VIRUS STRAINS

A large percentage of virus strains which were isolated from the field cases were of a low degree of pathogenicity. Two field strains were of exceptionally high virulence, possessing characteristics resembling the so-called "variant" strains. Several others which were reported to have been responsible for symptoms of a severe central nervous disturbance under field conditions and which were believed to be variant viruses did not prove to be such under experimental conditions. Laboratory manipulation or serial passages through experimental pigs did not appreciably increase the pathogenicity of these virus strains. The mortality was low in the greater number of field cases involving virus strains of low pathogenicity.

ANALYSIS OF FIELD PROBLEMS

Only herds showing more severe reactions or experiencing significant animal or economic losses were brought to our attention, either for diagnoses or confirmation of previous diagnoses. The processing of the tissues for inoculation apparently did not affect the activity of the virus strains. The clinical symptoms and tem-

perature reactions produced under experimental conditions were similar in most of the pigs to those reported from the field. In some cases this reaction lasted only a few days. Complete recovery followed with no apparent retarded growth and development. A few experimental pigs showed no clinical or temperature reactions.

Under these conditions, a negative diagnosis of hog cholera could have been made. These experimental pigs, when held for 20 to 30 days and challenged with 5 cc. of commercial virus, proved to be immune, which indicated that the original infection was hog cholera. Undoubtedly, many such cases have been given negative diagnoses in past years.

Positive diagnoses were difficult to make in several herds in which the clinical symptoms were more severe and of longer duration, and in which some losses occurred. Experimental pigs inoculated with tissue extract filtrates from the infected pigs developed reactions similar to those reported under field conditions. In both field and experimental animals examined, either dead or in a moribund condition, the pathological lesions were not well defined and in some instances were vague and not sufficient to warrant a diagnosis of hog cholera. The experimental animals which recovered, like those in the field, were seriously retarded in growth and development. They, too, were challenged with 5 cc. of commercial virus and proved to be immune. A diagnosis of cholera again was indicated.

This procedure in the laboratory is time-consuming and may try the patience of the swine producer, veterinarian, or others concerned. Animal inoculations for the confirmation of a diagnosis can be completed in about a week, but under conditions where immunity tests are required, the time element increases considerably.

VARIANT VIRUSES

The appearance of so-called "variant" strains of virus from field cases made it imperative to study these, as well as others that were considered as variants under field conditions. Laboratory manipulation and successive serial passages through susceptible swine enhanced the pathogenicity of only one such virus strain. The other field viruses in this group did not show variant characteristics nor could those qualities be created by our laboratory procedures.

Variant viruses are popularly believed to be able to break down a well-established immunity in cholera-immune swine. Whenever possible, variant strains of virus are inoculated into immune pigs in 5-cc. doses to determine whether the existing immunity will prove adequate. Up to the present time, all the so-called variant strains made available to the Institute have been tested and found to have no unfavorable effect upon immune swine.

STABILITY OF VIRUS STRAINS

Extensive studies were made on the stability of the virus strains isolated from tissues of field origin submitted to our laboratory. Virus strains of low pathogenicity remained stable as the result of serial passage through susceptible swine. The highly pathogenic strains studied were rather unstable and decreased considerably in pathogenicity following an extensive series of serial passages through experimental swine. Titrations of virus and the end point determination of virulence were not carried out.

FACTORS TO BE CONSIDERED IN POSTVACCINATION PROBLEMS

In the majority of unfavorable postvaccination reactions, it appears that the anti-hog cholera serum used in vaccination is uniformly potent and adequate. The virus involved may in some instances be the variable factor. Variant strains, regardless of their origin, apparently have been responsible for many unfavorable postvaccination experiences. Furthermore, the variability of the pigs in response to vaccination has long been observed and reported by some commercial laboratories. Likewise, research workers reported similar experiences following the inoculation of pigs with virus strains of low pathogenicity under experimental conditions. While certain swine show little or no unfavorable response, others manifest severe and often fatal reactions following vaccination.

Immunity tests conducted on those animals which had shown little or no unfavorable reaction indicate that immunity can be produced even though no perceptible clinical symptoms or temperature elevations are experienced. Considerable time and effort have been devoted to studying the factors in a virus which are responsible for postvaccination reactions and for fail-

ure to develop proper immunity. Up to the present time, these factors have not been determined.

Various serials of anti-hog cholera serum tested were uniform in potency and adequate for simultaneous vaccination with the commercial brands and laboratory strains of virus used. However, an exception was encountered with one field strain of virus.

Repeated vaccination tests with various serials of anti-hog cholera serum and selected field viruses indicate the existence of considerable variation in the antigenic pattern of these virus strains.

AVOIDABLE LOSSES

In spite of the severe losses which have been reported, postvaccination problems are still created by the vaccination of breeding stock during various stages of pregnancy, resulting in abortions, mummified fetuses and malformed, edematous or weak, unthrifty pigs. This problem will cease to exist if the pigs are vaccinated before or after weaning as recommended for the past few years. Further education in this matter, directed toward the swine producer as well as the veterinarian, may be effective in preventing such losses.

John's Disease Suspected in a Llama

A llama, 14 months old, raised in the Edinburgh Zoo, developed an acute and fatal diarrhea. Necropsy revealed intestinal lesions similar to those of John's disease. Acid-fast organisms resembling *Mycobacterium johnei* were found in stained sections of the intestine and mesentery lymph nodes but the organism was not isolated in cultures.—*Vet. Bull., Jan., 1956.*

A Summary on Scrapie

Through December, 1955, scrapie was diagnosed in 41 flocks of sheep in 14 states as follows: in 1947, Michigan—one flock; in 1953, California—two flocks, Ohio—five, Illinois—three; in 1954, Connecticut—one, New York—two; in 1955, Oregon—two, Illinois—one, Ohio—three, Indiana—13, Texas—one, Tennessee—one, California—one, Georgia—one, North Carolina—one, and Missouri—one. All known infected flocks have been slaughtered.—*Sheep Breeder, Feb., 1956.*

A Transmissible Paralysis of Pigs

A transmissible posterior paralysis of pigs has occurred in Denmark since 1949. It is usually sporadic, is restricted to certain herds, and usually affects pigs 1 to 3 months old, with a 50 per cent morbidity and about a 3 per cent mortality. A few of the pigs develop cerebral symptoms.

Histopathology showed lymphocytic and glial infiltration of the gray matter of the spinal cord. About 14 per cent of the apparently healthy pigs in affected herds showed similar lesions. The disease was transmitted, by intracranial inoculation, to 6 pigs after an average 18-day incubation period.—*Vet. Bull., Jan., 1956.*

Brucellosis in Sheep and Goats

Three strains of *Brucella melitensis* were compared for vaccination purposes in Tunisia. To infect a guinea pig, 50 times more *Br. melitensis* was required by skin scarification than by subcutaneous inoculation. Sheep and goats were conjunctivally infected and the infective dose was determined in each case. Goats were 20 times more sensitive to infection than sheep.—*Vet. Bull., Jan., 1956.*

Piperazine Dosage for Animals

When piperazine adipate was given to animals, at the following dosage per kilogram of body weight, it was an effective anthelmintic against ascarides: dogs, 200 mg.; cats, 100 mg.; pigs, horses, and poultry, 400 mg. It was also effective against red worms and oxyurids in horses, nodular worms in pigs, and *Uncinaria stenocephala* in dogs.—*Vet. Bull., Jan., 1956.*

Reaction to Rinderpest Vaccine

A herd of 145 Guernsey cattle in Kenya were vaccinated with lapinized rinderpest virus.

In the herd were 47 animals under 18 months of age which had not been previously vaccinated, the others having received inactivated tissue vaccine annually. Between the ninth and twelfth days, severe reactions which lasted about six days, appeared in the 47 young cattle. It caused a considerable loss of condition but no deaths. At the same time, 11,000 other cattle in the district were given lapinized vaccine, without incident.—*Vet. Rec., June 18, 1955.*

Comments on "What Is Your Diagnosis?"

In the July, 1955, issue of the JOURNAL, under "What Is Your Diagnosis?," acetabular dysplasia and femoral head subluxation were featured. Since this problem is deserving of much thought and consideration, the editors invited comments on eight questions. The following two letters from veterinarians present some interesting answers.

More About Acetabular Dysplasia and Femoral Head Subluxation

To the Editors:

I would like to answer as best I can the questions posed on bilateral acetabular dysplasia because, unfortunately, I have had many such cases to deal with from buyers and sellers of pups.

1) The cause is hereditary. I don't think the breeder is liable when such a pup is sold unwittingly but certainly a reliable, conscientious breeder would offer to replace such a pup.

2) I feel that it is a congenital factor which is

dominant. I have seen 2 Labrador pups about 6 or 8 months old in which the symptoms showed up only after rigorous exercise and training for field trials. The dysplasia was probably present prior to the symptoms but was aggravated by the heavy training. The pups were from different litters but had the same sire. The second pup was a replacement for the first one when it developed a femoral head subluxation. After the second pup proved to have the same defect, the breeder was



Fig. 1—Radiograph of pelvis of patient.

History.—A 2-year-old dog was in good physical condition except for an occasional awkward gait of the hindquarters. The dog sometimes showed clumsiness in getting up from a sitting position. A radiograph was made of the pelvic region (fig. 1).

asked to bring in the parents for radiographs. They were clinically sound but had noticeably shallow acetabulums.

3) After several litters, using different matings, it should be possible to determine the carrier and this bloodline should not be used for breeding.

4) I doubt if nutrition is a factor.

5) The age at which the defect can be detected depends upon the degree of dysplasia. One German Shepherd pup about 3 or 4 months old had bilateral complete luxations. This pup could walk but with difficulty. Yes, the degree of dysplasia considered unsound would vary with the breeds.

6) Radiologically, one could estimate the degree of abnormality but I would think that, in order to judge an animal unsound, it would have to be apparent clinically. The position of the hind-legs most definitely helps to portray the abnormality.

7) I would say that possibly x-ray exposure may have been the cause of sterility but I doubt if it could be proved or if the veterinarian could be held liable.

8) The radiographs, even after being paid for, are the property of the veterinarian.

Sincerely yours,
S/Lorraine Beaman Nielsen (MSU '47)
Columbus, Ohio.

• • •

To the Editors:

Acetabular dysplasia and femoral head subluxation in the dog have been observed by me many times. The condition and radiographs have been exactly like the one shown in the JOURNAL, except that occasionally it was unilateral. The condition can usually be diagnosed clinically by a typical diamond or hexagonal shape on the hips, due to the spreading of the femurs. The gait is shuffling, the hip action is limited, and (as you state) the dog has difficulty in rising from a sitting position. I have found it mostly in German Shepherds but also occasionally in English Setters, Boxers, and 1 Gordon Setter, usually between the ages of 4 and 6 months.

Our opinions on the eight questions presented in your case history are as follows:

1) The condition is hereditary and the breeder is liable. In our experience, breeders have agreeably assumed this liability.

2) The condition is probably recessive, since it shows up suddenly in otherwise normal litters. Since it causes a definite fault in the gait, it is doubtful that many affected animals are used for breeding. Our experience shows only 1 or 2 pups in a litter affected where the parents were apparently normal—a point in favor of the recessive theory.

3) The rejection of known affected animals as breeders and the destruction of affected puppies will help to control the defect.

Many breeders will take a chance on a few affected individuals to obtain, or retain, some other

particularly desirable trait. A study of bloodlines might reveal a tendency to produce the fault and those lines could be avoided in breeding.

Outcrossing to another strain will mask a recessive but will retain the potential hazard. One should be particularly careful about line-breeding in a breed where such a serious condition is prevalent.

4) Nutrition is not a factor. We have seen this condition in well-nourished litters.

5) Clinically, the condition shows up at about 4 months of age. We have no record of having demonstrated it radiologically before it was manifested clinically. Any degree of dysplasia in any breed would be considered an unsoundness as far as breeding is concerned.

6) We considered as being unsound any degree which causes symptoms. We use radiographs to substantiate the diagnosis since we invariably recommend euthanasia.

For x-ray examination we feel that the position shown in your radiographs is the best.

7) It has been stated that x rays can cause sterility but there are many other possible causes. It is assumed that the owner requested the examination and, therefore, in view of this and the above, the veterinarian could not reasonably feel liable.

8) X-ray films are medical records and do not belong to the client any more than do case history cards, treatment records, or other records pertinent to the case.

Very truly yours,
S/John Q. Adams (UP '44), Captain, V.C.

Rabies Fatal to Texas Entomologist

An entomologist engaged in research on rabies in bats, in Texas, developed a typical fatal case of the disease. The diagnosis was confirmed by animal inoculation although Negri bodies were not found. There was no history of a bite, so accidental infection through a dermatitis lesion was suspected.—Pub. Health Service, Dept. of Health, Education, and Welfare, Feb. 9, 1956.

Neomycin Nephropathy in Man

Damage to the renal tubules contributed to the death of a man three and one half months after he had been given 1 Gm. of neomycin per day for 19 days. Treatment had been discontinued because he had developed albuminuria and had suddenly become deaf. Of eight other cases reviewed, in which autopsies had followed neomycin therapy for 17 days or longer, five showed a similar nephritis. A focal, rather than a diffuse, nephritis can be produced with neomycin in guinea pigs.—J.A.M.A., Feb. 18, 1956.

Preliminary Report of Studies on a Catarrhal Vaginitis of Cattle

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FOUR HERDS of cattle exhibiting a catarrhal vaginitis and cervicitis have come to the attention of the senior author within the last year and a half. The similarity of the vaginal changes, the rapid spread, and the evidence of coital transmission suggested that a specific etiological agent might be involved. This paper reports the observations made in the affected herds and the isolation of a virus associated with the condition.

Viral bovine vaginitis has been reported in South Africa^{1,2,4} and England.³ Van Rensburg² suggests that two genital diseases of viral origin exist in South Africa: (1) infectious infertility or "epivag" which is characterized by epididymitis and infertility in the bull, and vaginitis, salpingitis, adhesions of the ovary and fimbria, and infertility in the cow; and (2) a mild type of vaginitis which does not spread anteriorly, is not associated with epididymitis, and results in a temporary infection. McIntosh, Haig, and Alexander⁴ have recovered a virus from animals apparently affected with the latter type of vaginitis. The same workers cite unpublished work by Blakemore of England who reported the recovery of a virus associated with vaginitis of cattle. Millar³ in England reports recovery of a virus from a condition in which vaginitis and endometritis are the primary lesions.

CLINICAL OBSERVATIONS

Affected animals are recognized either by infertility or by a vaginal discharge. When sufficient exudate is present it is periodically expelled from the vagina and smears the tail and buttocks. A vaginal examination reveals that the cervix and vagina are markedly hyperemic. The cervix is edematous and appears smooth. The vagina contains 10 to 50 ml. of a nonodorous, yellow mucoid exudate. Rectal examination reveals no recognizable changes in the uterus, oviducts, or ovaries. The course of the disease is several days to three months.

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Fertility is lowered but conception usually occurs within two or three months of the onset, and some animals have conceived while the vaginitis existed.

In one beef herd, it was possible to make careful observations of the disease. This herd was segregated for breeding purposes into three groups. Group I and II, containing a total of 39 animals, were composed principally of cows that had calved one or more times. Group III consisted of 16 yearling heifers. On March 1, 1955, the three groups were placed in separate pastures. A bull was placed with each group at the beginning of the breeding period and remained with the group throughout the season. Three weeks after the breeding season began, the herdsman noticed that several animals had a yellow, mucoid discharge from the vagina. Examination revealed a condition similar to that observed previously in the other herds. The vagina and cervix were fiery red and the cervix was also edematous. From 10 to 30 ml. of a yellow, mucoid exudate was present in the vagina of each affected animal and some was smeared on the tail and buttocks. No abnormality could be detected anterior to the cervix. During the next three weeks, 12 affected animals were observed in this herd. All were treated by instilling a solution of terramycin® into the vagina. Efficacy of this treatment is doubtful. Subsequent examinations revealed that some animals were free of discharge and vaginal congestion in four days, while in others the condition persisted for three weeks. Animals were affected in all three groups with the highest prevalence among the yearling heifers. Of 8 yearlings affected, only 2 conceived. Of the 39 cows in groups I and II, 33 conceived, as determined by rectal examination.

Examination of the 3 bulls used in this study revealed the only abnormality to be a seminal vesiculitis in the bull used to serve the 16 heifers in group III. In this one animal there was some pus in the semen which was otherwise normal. Particular attention was paid to the examination of the

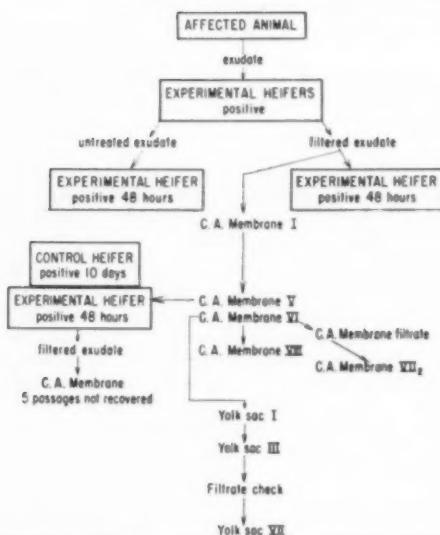


Chart 1.—This chart shows how exudate from affected cattle was passed through experimental heifers, chorioallantoic membrane, and chicken embryos.

testicles and epididymides but no abnormalities were noted.

The bulls were left with groups I and II for the duration of the breeding season which extended over a period of three months. The bull was removed from group III late in the course of the disease and the animals were inseminated artificially with semen from a commercial bull stud.

EXPERIMENTAL PROCEDURE

Transmission Studies.—Two virgin heifers, 1 and 3 years old respectively, were selected for the initial transmission study. A preinoculation examination of the cervix and vagina of each animal revealed them to be normal. Exudate collected from affected cattle in the herd described above was introduced into the vagina of these experimental heifers on sterile gauze swabs (chart 1, step 1).

The yearling exhibited a mild reaction on the third day after inoculation. On the eighth day, the vagina and cervix were fiery red and the vagina contained approximately 20 ml. of the characteristic exudate. The condition persisted with some variation for three months. Occasionally as much as 100 ml. of exudate was removed from the vagina. The second animal exhibited a mild reaction only and only a small amount of exudate was observed.

Exudate collected on the eighth day from the yearling was used for further experimental inoculations.

Etiological Studies.—The transmission experiments having shown the disease to be infectious, a study of the nature of the etiological agent was undertaken. Specimens of the thick, tenacious exudate, which fortunately could be mechanically disintegrated sufficiently to make the study possible, were cultured on bacteriological media. When no bacteria of possible etiological significance were recovered, the presence of a virus was investigated. The vaginal exudate first had to be liquefied so that it could be either filtered or treated with antibiotic agents.

Preliminary trials indicated that this could be readily accomplished by trypsinization. Accordingly, a quantitative procedure was worked out and used in preparing materials for the inoculation of chicken embryos and cattle. The details of the procedure employed were: To 3 ml. of vaginal exudate from a heifer infected by experimental inoculation were added 15 ml. of a filtered, 0.25 per cent solution of trypsin, and 25 ml. of beef heart infusion broth containing 10 per cent by volume of horse serum. The mixture was then blended for several minutes in a chilled Waring blender. After being held at room temperature for two hours, the material was centrifuged at 2,000 r.p.m. for ten minutes and then was passed through a Seitz pad under positive pressure.

The filtrate thus obtained was divided into two portions; one was used to inoculate a heifer by the vaginal route, the other was inoculated without further dilution to the chorioallantois of each of 12, 8-day-old chicken embryos (chart 1). The amount inoculated was 0.2 ml. per egg. The inoculated eggs were incubated in an ordinary forced-draft egg incubator, regulated to maintain a temperature of 35 C., and candled twice daily. Adequate sterility controls of the inoculum were included.

After six days' incubation, all the inoculated embryos were still viable. These were killed and the chorioallantoic membranes (c.a.m.), which were rather thick and edematous, were harvested and pooled. A 10 per cent suspension was prepared therefrom in beef heart infusion broth and lightly centrifuged. From the supernatant fluid, dilutions of 10^{-1} and 10^{-2} were prepared in the broth diluent. Eight-day old chicken embryos were then inoculated, some with the 10^{-1} dilution and the re-

mainder with the 10^{-2} dilution. Incubation was carried out as previously described, and the eggs were examined twice daily by candling.

All embryos died on the third to fifth day after inoculation. The inoculum controls, however, were negative for bacteria. Chorioallantoic membranes harvested from these embryos were again passed as described above, and the procedure repeated in series. After approximately the fourth serial passage, the mortality pattern became stabilized, with the great majority of deaths occurring on the third day of incubation, the rest usually on the fourth day. A total of eight consecutive passages was made on the chorioallantois as described above, using decimal dilutions from 10^{-1} through 10^{-3} of c.a.m. as inoculum.

In addition to the fact that the sterility control mediums remained negative for bacterial growth, further evidence that a nonbacterial agent was being transmitted was provided by demonstrating that Seitz filtrates of infected c.a.m. were as infectious for chicken embryos as were corresponding dilutions of unfiltered materials. For serial passage, however, unfiltered inoculums were routinely used.

Growth of the agent was adapted to chicken embryos by yolk sac inoculation. The initial inoculum consisted of 10^{-1} and 10^{-2} suspensions of c.a.m. from the sixth consecutive egg passage. These were inoculated into 7-day-old embryonating hen eggs which were then incubated and examined in the manner described above. By the end of four days' incubation at 35°C., half of the embryos had died. The dead embryos were harvested and pooled, and a 10^{-1} suspension prepared therefrom was used to inoculate a second group of eggs by the yolk sac route. After several such serial passages, the embryo mortality was practically 100 per cent, usually by the end of the third day of incubation. As in the case of the chorioallantois-inoculated series, filtrates of embryos infected by the yolk sac route were found to be as infectious for chicken embryos as were unfiltered embryo suspensions.

The agent was subsequently adapted to suckling mice by intracerebral inoculation, but with some difficulty. By direct brain-to-brain passage, it failed to adapt. However, by alternating between chicken embryo and mouse brain it finally became established, and by the fourth alternate

passage in the latter host, it produced 100 per cent infection.

Following the isolation of an agent from the original outbreak of vaginitis studied, attempts were made to recover the agent from a clinically similar field outbreak. However, no additional isolations were made from either vaginal exudate or vaginal epithelium of cattle killed during the infection. In view of the readiness by which an agent was isolated from the original outbreak, these negative results are difficult to account for.

Pathogenicity Studies.—The heifer that received a part of the filtrate used as inoculum for the original chicken embryo series developed a mild catarrhal vaginitis which persisted from the second to the eighth day after inoculation. The second animal, the one which received an unfiltered portion of the same specimen, also developed a vaginitis that became evident after 48 hours. However, her vaginal discharge persisted for 30 days.

To determine the relationship of the agent being transmitted in chicken embryos to the condition from which it was presumably recovered, it was inoculated, after five consecutive transfers on the chorioallantois, into a 6-month-old virgin heifer (chart 1). Five preinoculation vaginal examinations made at 48-hour intervals established that the vagina of this animal was normal and that the technique of examination did not cause vaginal irritation. The inoculum consisted of 13 ml. of the supernatant fluid obtained by lightly centrifuging a 20 per cent suspension of c.a.m. in beef heart infusion broth. Half of the inoculum was absorbed on a gauze tampon, which was placed in the vagina, while the remainder was pipetted into the vagina. The tampon was removed four hours later. A control heifer of the same age was inoculated in the identical manner, using c.a.m. suspension prepared from uninoculated eggs.

On the second day, the animal receiving the infectious egg material developed a mild vaginitis accompanied by the typical exudate. However, this experiment was considered inconclusive when the control developed a similar clinical syndrome on the tenth day. Contact exposure is believed to have caused the latter infection. However, failure to recover the agent in chicken embryo from the experimentally

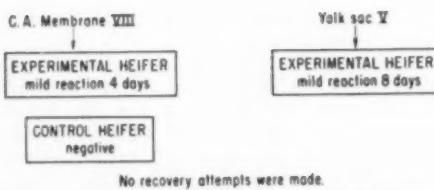


Chart 2—In a second attempt to reproduce the disease with the chicken embryo-adapted agent, 3 yearling heifers were used.

infected heifer served further to negate the results of this experiment.

In the second attempt to reproduce the disease with the chicken embryo-adapted agent, 3 yearling heifers were used (chart 2). A preliminary examination of the vagina and cervix of each animal revealed that all were normal. The test animals were inoculated by absorbing the inoculum on gauze tampons which were placed in the vagina for 12 hours. A sterile tampon was placed for the same length of time in the vagina of a third heifer which served as a control. The first heifer received 10 ml. of a 20 per cent suspension, in beef heart infusion broth, of c.a.m. from the eighth egg passage. The second was given 10 ml. of a 20 per cent suspension of embryo from the fifth yolk sac passage series which was initiated with materials from the sixth c.a.m. passage. This animal, therefore, received a culture of the agent which had been cultivated for 11 consecutive passages in chicken embryos.

On the fourth day, the animal receiving the lower passage material exhibited a mild

hyperemia of the vagina and cervix which lasted for approximately one week. During this time an odorless, clear, greenish, serous mucus mixed with small amounts of a whitish mucoid material was present in the vagina. The second experimental heifer, which was inoculated with the higher passage material, reacted in a similar manner beginning on the eighth day. The control heifer remained unchanged over a period of 22 days during which time examinations were made at two-day intervals. The reaction in these animals was clearly not typical of the infection produced previously. The mildness of the vaginal changes suggested that the virus might have become modified by egg passage, or that the heifers were at least partially immune.

To avoid the former possibility in further transmission attempts, a culture of the agent, which had been stored under dry ice refrigeration for two and one-half months in the form of third passage c.a.m., was passed two more times on the chorioallantois of chicken embryos. From these embryos a 20 per cent suspension of c.a.m. was prepared and 2, 7-month-old heifers were inoculated, (chart 3), after ascertaining by clinical examination that the vagina of each was normal. Then 5 ml. of the inoculum was absorbed on each of two gauze sponges and one was then used to swab the vagina of each animal. One heifer received an additional 4 ml. of inoculum which was pipetted into the vagina.

Forty-eight hours later, the vagina and cervix of each animal were dark red, and the fornix of the vagina contained 5 to 10 ml. of the characteristic exudate. Enough was discharged to soil the tail and buttocks and occasionally some was found on the floor of the stall. The reaction in the animal receiving the additional 4 ml. of inoculum by pipette was more severe than that of the other. At the end of the two-week examination period, the vagina and cervix of each heifer were still moderately reddened, and a small amount of pus could be found in the fornix of the vagina.

Exudate collected from these animals between the seventh and twelfth days after inoculation was pooled and the agent was reisolated from both filtrates and antibiotic-treated portions of this material by chorioallantois and yolk sac inoculation. In order to confirm that the same agent as that inoculated had been recovered, a pool

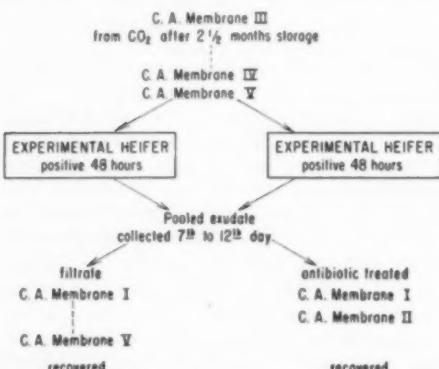


Chart 3—The agent was recovered after further passages through the chorioallantois of chicken embryos and experimental heifers.

consisting of third passage embryo and fifth passage c.a.m. suspension from the recovery series was inoculated intravaginally into 2 heifers. The typical infection was produced in 1 of these animals while the second exhibited a questionable response.

DISCUSSION

On the basis of studies reported in this paper, it has been established that a catarrhal vaginitis caused by a virus exists in cattle in California. The condition is clinically similar to the mild type of vaginitis observed in South Africa.^{1,2,4} In addition to the similarity of the clinical syndromes is the fact that a virus has been isolated in each case. However, the virus described by the South African workers⁴ differs in certain respects from the one recovered by the California group. The most obvious difference is the fact that growth of the latter agent was readily adapted to chicken embryos, in which it produced a high mortality beginning with the second egg passage, whereas the agent recovered by McIntosh and his collaborators required a much longer time to adapt to this host, and the mortality was much lower. Considerable difficulty was experienced in adapting the California agent to suckling mice. However, the virus described by the South African workers was established directly from both infected cattle and chicken embryos. It is believed, however, that it will be possible to resolve the question of relationship between the two isolates by means of serum-virus neutralization tests, and by a parallel study of each agent in the natural and experimental hosts. These studies are to be initiated shortly.

Because of the limited number of herds observed and the failure to isolate more than one strain of the virus, no conclusions can be drawn as to the distribution or economic importance of the disease in the United States. Clinical observations as well as efforts to recover new strains of the virus are being continued.

SUMMARY

Clinical observations and experimental studies with a virus isolated from cattle indicate that a viral catarrhal vaginitis exists in cattle in California.

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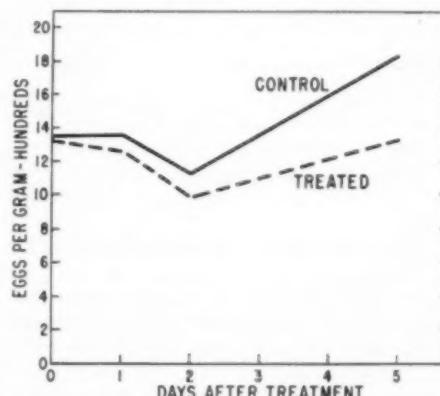
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Trial with Di-phenthane-70 on Stomach and Intestinal Nematodes in Sheep

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Di-phenthane-70, *bis* (5-chloro-2-hydroxy-phenyl) methane, has been reported to be effective in removing *Thysanosoma actinoides* from sheep when administered at a dosage of 0.04 to 0.40 Gm. per pound of body weight.¹ Enzie *et al.*² concluded, however, that di-phenthane-70 was not as reliable as other available teniacides in removing *Moniezia expansa* from sheep. In none of the reports of trials with this drug in sheep is there mentioned the effect



Graph I—The effect of di-phenthane-70 on ovogenesis of trichostongyles in lambs.

of di-phenthane-70 on the stomach and intestinal nematodes.

Because di-phenthane-70 is being em-

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ployed to remove tapeworms from sheep and also because there have been unsubstantiated reports that it possessed nematocidal activity in ruminants, the trial reported herein was undertaken.

METHODS

Seventeen lambs were brought from the range and placed in drylot. They were fed alfalfa hay, and periodic fecal egg counts were made. After 40 days, when the counts became relatively stable, the lambs were separated into groups of 10 and 7 animals. Six fecal egg counts, made during the 13 days preceding treatment, gave an average of 1,348 per gram of feces for the group of 10 lambs and 1,322 for the group of 7.

Di-phenthane-70 was administered to the group of 7 lambs at a dosage of 6 Gm. per animal, approximately 0.15 Gm. per pound.

Fecal egg counts were made on the first, second, fifth, and seventh days after treatment. On the seventh day, the animals were slaughtered and total worm counts were made on the abomasums and small intestines by a method previously described.² Equal quantities of worms from each animal were pooled according to organ and group for identification.

RESULTS AND DISCUSSION

The percentage incidence of worms by genus as found in the abomasum and small intestine in the treated and control lambs is computed in table 1.

TABLE 1—Percentage Distribution of Worms by Genus

	Ostertagia	Trichostrongylus	Haemonchus	ABOMASUM	
				Treated	Control
	81	15	4		
	65	29	6		
				SMALL INTESTINE	
				Trichostrongylus	Nematodirus
				42	58
Treated				47	53
Control					

In the abomasums of the untreated lambs, 5 per cent of the Ostertagia males were identified as *Ostertagia trifurcata*,

TABLE 2—The Average Number of Worms Recovered from Each Lamb

	Abomasum	Small intestine	Total
Treated	1,110	724	1,834
Control	926	972	1,898

the rest being *Ostertagia circumcincta*. In the genus Trichostrongylus, based on identification of males, 83 per cent were *Tri-*

chostrongylus axei and the remainder *Trichostrongylus vitrinus*.

In the small intestines, Trichostrongylus included 96 per cent *T. vitrinus* and 4 per cent *Trichostrongylus colubriformis*. Of the Nematodirus, 28 per cent were *Nematodirus flicollis* and the remainder were *Nematodirus spathiger*. About 14 per cent of all Nematodirus examined were classed as immature.

The average number of worms recovered from each lamb is shown in table 2.

Analysis of these data, utilizing students' t-test, indicated that the differences shown in table 2 were not significant.

The effect of di-phenthane-70 on oogenesis is illustrated in graph 1. The average number of eggs per gram of feces per lamb on five samples taken during the seven days following treatment was found not to be significantly different in the treated and control groups. It was also determined that the differences between the two groups in average egg counts recorded on the seventh day after treatment were not statistically significant.

SUMMARY AND CONCLUSIONS

Di-phenthane-70, when administered at the rate of 6 Gm./40-lb. lamb, did not significantly reduce the numbers of nematodes in the abomasum or small intestine. It also failed to effect a significant reduction in the number of eggs produced by the female worms.

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Insecticide Resistance of Ticks.—After a six-year dipping campaign for the eradication of *Boophilus microplus* from cattle in Argentina, arsenic-resistant ticks were developed. They were found to be susceptible to benzene hexachloride and chlorinated camphene.—*Vet. Bull.*, Jan., 1956.

Vitamin D-Fortified Milk and Rickets

Infantile rickets, which was common as recently as the 1920's, is now almost at the vanishing point in the United States. In 1922, an antirachitic principle was recovered from cod-liver oil and used in vitamin D-fortified milk. In 1924 it was found that vitamin D activity was induced in foods by exposing them to ultraviolet rays. Since that time rickets has almost disappeared. —*J. Am. M. A.*, Nov. 5, 1955.

Phosphorus, Vitamin E, and Perosis

Turkeys poult, at 24 weeks of age, showed a decreasing incidence of perosis as the phosphorus level in their ration from hatching to 8 weeks of age was increased from 0.3 to 0.7 per cent, whereas an increase to 0.9 per cent resulted in an increase in perosis. Feeding vitamin E resulted in a reduced perosis except when only 0.3 per cent of phosphorus was fed. —*Poult. Sci.*, July, 1955.

Estrogen Content of Certain Feeds

Many plants such as alfalfa and other legumes, especially subterranean clover, have shown estrogenic activity. A natural estrogen, estradiol, is known to increase the nonfatty solids of milk. When their estrogenic activity was tested on mice, it was significantly greater in alfalfa silage than in freshly cut alfalfa.

Corn or brome grass silage produced no significant estrogenic activity. The greatest estrogenic activity occurred in alfalfa silage preserved with molasses. Using ground corn as a preservative in the silage did not increase the estrogenic activity. —*J. Dai. Sci.*, Jan., 1956.

Value of Preservatives in Silage

When green forage is placed in a silo, it undergoes a series of changes: respiration, enzyme action, aerobic bacterial activity and, most important, anaerobic bacterial activity. Sugars are changed to alcohols and then to acids strong enough to stop bacterial action. This process takes about a month; then, if undisturbed, the silage is preserved indefinitely. Exposure to air activates mold growth and deterioration. Without a preservative, the palatability

may not be changed but much nutritive value is lost by excessive respiration and bacterial action.

Additives used in making silage include: molasses, cornmeal, cereals, beet pulp, sulfur dioxide, sodium bisulfite, and inorganic acids. The latter, by rapidly increasing the acidity, reduce undesirable fermentation but they may cause corrosion or require neutralizing with lime. Sodium bisulfite, by its capacity to use oxygen, prevents loss from respiration, improves palatability, and retains valuable carotene. Sulfur dioxide acts similarly but creates handling problems.

The plant-source additives do not affect the respiration but increase the material to be fermented. Therefore, they are considered more as supplements. —*J. Agric. and Food Chem.*, Jan., 1956.

Deficiency Congenital Anomalies

Congenital abnormalities such as cleft palate, harelip, clubfoot, and missing or excessive digits were produced in baby rats by subjecting the dams to severe dietary deficiencies for as little as two days during a critical period of pregnancy. Death or deformities were produced in 70 to 100 per cent of the young by withholding folic acid, and giving antimetabolites to prevent its synthesis, for 48 hours between the seventh to twelfth days of pregnancy, the period when embryonic tissue is differentiating and organs are being formed. The five days corresponds to a one- to two-week period of human pregnancy. Deficiencies of riboflavin or of pantothenic acid for four days also resulted in deformities. —*Sci. News Letter*, Jan. 28, 1956.

Value of Oxalate in Forage Grasses

Since the average milk production of dairy cows in the tropics is much less than in the temperate zones (400 lb. in India, 2,000 in Puerto Rico, compared with 5,000 lb. in the U. S.), a reason was sought in the quality and chemical composition of the available forage grasses. It has been shown that, under proper management, dairy herds in Puerto Rico could equal in milk production those in the U. S. In a controlled test of 24 frequently encountered tropical forages and cut grasses, it was learned that the ones most commonly used were those containing the highest concen-

tration of oxalates. Five of them contained more than 1.6 per cent oxalic acid and it has been shown that this quantity will lead to a negative calcium balance when fed ad libitum to nonlactating cows. Research to determine whether these oxalate-rich grasses are defective in nutritive value or detrimental to the health of the cows continues.—*Science, Dec. 2, 1955.*

Absorption and Metabolism of Iron

Iron is an essential component of the hemin chromoproteins, such as hemoglobin, which are essential to the transportation and utilization of oxygen.

A food high in iron may not be a good source of biologically available iron, since some firmly bound iron resists ionization. The divalent iron (ferrous) is more soluble and is absorbed to a greater extent than the trivalent (ferric) type. However, the chemical nature of the iron is probably of less importance in availability than other factors. Reducing mechanisms in the digestive juices or from the diet (ascorbic acid and sulphydryl compounds) will determine the proportion of ferrous iron. (Iron is absorbed chiefly from the stomach and duodenum.)

Ferric iron readily forms undissociable complexes with phosphate; therefore, the presence of phosphate can reduce the absorption of iron, whereas the lack of phosphate can lead to an excess accumulation of iron in the body (hemosiderosis). Thus calcium, combining with the phosphate, can increase iron absorption. Phytic acid (from plants) also can inhibit iron absorption by forming insoluble iron complexes. Again, calcium can be a factor by tying up the phytic acid. This may explain the lower absorption of iron when taken with food. A deficiency of copper also lowers iron absorption.

Since iron is retained in the body and reutilized, very little is excreted; hence, a mechanism for regulating iron absorption to prevent a toxic accumulation is necessary. This seems to be provided by a selective action of the intestinal mucosa. When iron is lost, from hemorrhage, the amount absorbed is increased many times but not until several days after the hemorrhage. This suggests that the intestinal mucosa does not respond to the hemoglobin level, but waits until the body store of iron is depleted. A single large dose of iron taken

orally will block absorption for several days, suggesting that the iron is not passed through the mucosal cells into the blood as rapidly as it can be absorbed. However, in pernicious or hemolytic anemia, and certain other conditions, iron continues to be absorbed even when stored in excessive quantities.

Whole blood normally contains 40 to 50 mg. of iron per 100 ml., 99.9 per cent of it in the form of hemoglobin which is an iron-porphyrin (heme). The hemoglobin has a unique property of combining reversibly with oxygen, being saturated in the lungs and giving up about 70 to 90 per cent of the oxygen to the tissues. In the muscle, this oxygen is taken up by another heme, myoglobin, which acts as an oxygen reservoir and delivers the oxygen to the cytochrome system and other energy-producing systems of the cell. Catalase and peroxidase are two other iron porphyrin-protein enzymes present in nearly all tissues, presumably to prevent toxic accumulations in cells. Thus, iron plays a key role in the most vital processes of the body.

The human body contains about 4.5 Gm. of iron stored as hemoglobin (72.9%); myoglobin (3.3%); parenchymal iron (cytochromes, catalase, and peroxidase) (0.2%); and storage iron (23.5%), most of which is in the liver, bone marrow, and spleen. In the dog, the iron is distributed in the hemoglobin (57%); myoglobin (7%); parenchymal iron (16%); and storage iron (20%). The myoglobin and parenchymal fractions are less labile than the hemoglobin and storage fractions.

Barring blood loss, the normal human male requires only 1.2 mg. of iron per day to replace that excreted. Pregnant women, because of loss to the fetus, require about 3.8 mg. per day. Growing animals also require more than male adults.

In therapy, iron is given in as large a dose as can be tolerated. A common mistake is to discontinue therapy when hemoglobin cells become normal and before the deficit in the tissues has been replaced.—*Science, Jan. 20, 1956.*

Antibiotics with Milk in Pig Feeding.—Streptomycin and penicillin produced only minor increased gains when fed to pigs in New Zealand which were fed chiefly on separated milk.—*Vet. Bull., Dec., 1955.*

Vitamin A Deficiency in Beef Cattle

Beef cattle suffering from vitamin A deficiency, in Alberta, in the past three years, were divided roughly into three groups depending on predominant symptoms:

1) Calves which were born weak and sometimes died quickly, had constant scours, frequently had pneumonia, or sometimes eye lesions. Their response to treatment was good.

2) Calves up to 6 months of age with nervous symptoms. They were generally thrifty and active until suddenly affected; showing extension of the head, stiff-legged running movements, and sometimes eye lesions. The response to treatment was generally poor.

3) Yearlings with blindness but no gross eye lesions, with increased lacrimation in a few, occasional edematous swelling from the shoulder to the elbow, but normal in all other respects. These animals had usually been stabled early and given heavy grain rations. Two of the latter, when examined with an ophthalmoscope, showed indistinct optic papillae and 1, when the head was dissected, showed stenosis of the optic foramina.

The diagnosis was first confirmed in a 3-day-old Jersey calf with marked symptoms, which recovered after vitamin A therapy but in which relapses could be produced in 72 hours by feeding the dam's milk which had been aerated for several hours to destroy its vitamin A content. The author (J. G. O'Donoghue, D.V.M.), suggests that the condition is not produced by one poor hay crop but seems to be cumulative. Calves from heifers were most frequently affected and a few cases in calves developed where feeding and management were above average.—*Canad. J. Comp. Med.*, Dec., 1955.

Genistein in Subterranean Clover

More than 100 strains of subterranean clover were examined, in Australia, for genistein content. Without exception, they contained an appreciable concentration of this estrogen in the leaf fraction. Most other *Trifolium* were genistein-free, but one (*T. globosum*) contained about as much as subterranean clover.—*Vet. Bull.*, Jan., 1956.

Feeding Ground Chicken Litter.—Ewes fed ground chicken litter in place of the usual protein concentrates did as well as those fed soybean meal and better than those fed ammoniated molasses. However, steers did not gain as well as those fed an equal amount of cottonseed meal.—*J. Anim. Sci.*, Aug., 1955.

Phosphorus Sources for Swine

When phosphorus from various sources was compared, either steamed bone meal or dicalcium phosphate produced a better rate of gain, feed efficiency, and bone formation than colloidal phosphate clay. Swine did not efficiently utilize phytin phosphorus (from plants).—*J. Anim. Sci.*, Nov., 1955.

Stilbestrol Saves Feed but Not Time

Feeding stilbestrol improves the daily rate of gain, permitting substantial savings in feed requirements, but to reach the desired degree of fatness cattle must be marketed at heavier weights, according to the Agricultural Research Center, Beltsville, Md. The trend toward feeding antibiotics, hormones, and arsenicals presents problems concerning their interrelationship in animal nutrition which must be solved.—*U.S.D.A.*, Jan. 24, 1956.

Vitamin A in Hyperkeratosis of Man

Hyperkeratosis on the plantar surface of the heel, 3.0 cm. by 1.9 cm., responded temporarily to x-ray therapy in 1952 and again 12 months later. Cortisone ointment was then tried without benefit. When vitamin A (100,000 I. U. daily) was given, for two weeks for a cold, the condition improved but later retrogressed. Vitamin A was resumed with the dosage doubled and in two months the skin was normal. The dosage was reduced but continued for several months. There has been no recurrence.—*Brit. Med. J.*, Jan. 7, 1956.

B₁₂ Fed to Hens Stimulates Chick Growth.—When vitamin B₁₂ is fed to hens over a long period, it stimulates the growth of their chicks much more than when it is fed directly to the chicks. Feeding cow manure to the hens has the same effect.—*World's Poult. Sci. J.*, July-Sept., 1955.

Editorial

Fiftieth Anniversary of Federal Meat Inspection Service

The golden anniversary of the Federal Meat Inspection Act will be observed this year. A proclamation by President Eisenhower, a joint Congressional resolution, and a special commemorative stamp will designate the week of June 24, 1956, as National Pure Food, Drug, and Cosmetic, and Meat Inspection Laws Week.

A cooperative program between the U.S.D.A. and organizations closely allied with the meat industry is being planned to explain to the public: the part meat inspection plays in assuring consumers of the wholesomeness of meats; the benefits to



The symbol designed for the fiftieth anniversary of the Federal Meat Inspection Service.

the farmer, industry, and the public; the nutritional aspects of meat; and the history of meat inspection, how it operates, and its present status.

A committee representing the American Meat Institute, the National Livestock and Meat Board, and the AVMA has been established to assist the U.S.D.A. in implementing the program.

Included in the anniversary plans are:

- 1) an exhibit in the foyer of the Department of Agriculture Building in Washington, D. C., during June;
- 2) a hand-out leaflet, entitled "Meats with Approval," for general distribution;
- 3) radio and television programs, designed to develop the theme of government-industry teamwork in providing wholesome meats for consumers;
- 4) press and magazine stories featuring the purple inspection stamp, with an explanation of how inspection gives consumers assurance of the cleanliness and

wholesomeness of today's meats;

5) development of a fiftieth anniversary symbol to be made available to retailers, wholesalers, processors, and others to incorporate in placards, advertising, letterheads, and publications.

6) designing a postage meter slogan for use by industries and others;

7) development of a speaker's kit to provide background material for speeches by inspectors and others working with consumer groups.

Details of availability of fact sheets, mats, or photographs of the fiftieth anniversary symbol, postage meter slug, and other material can be obtained through the AVMA office, the American Meat Institute, the National Livestock and Meat Board, or Office of Information, Agricultural Research Service, U.S.D.A., Washington, D.C.—H.E.K.

Livestock Statistics

At present, there is considerable concern about an imbalance in our national economy; therefore, relevant statistics attract increased attention. And since the welfare of most veterinarians is closely associated with that of agriculture, we are vitally concerned.

It is, therefore, encouraging to learn from a U.S. Department of Agriculture release that the retreat in livestock values in 1955 was not uniform. While the total value of all livestock on farms and ranches on Jan. 1, 1956, was \$442 million (4%) less than the year before, most of this loss was in swine values.

Comparable Average Value of Livestock Per Head

	Jan. 1, 1956	Jan. 1, 1955
All cattle	\$ 88.00	\$ 88.20
Milk cows	139.00	134.00
Hogs	17.70	30.60
Sheep	14.30	14.90
Horses and mules	62.60	56.20
Chickens	1.26	1.05
Turkeys	5.50	5.33

The per head value increased slightly for milk cows, poultry, and horses and mules. Significantly, there was a slight decline in the number of animals in each of these categories, whereas in swine there was about a 10 per cent increase.—H.E.K.

Current Literature

FOREIGN ABSTRACTS

Prolapses and Mineral Deficiencies

One of the important points brought out at a symposium on nutrition held at the Alfort National Veterinary School in France recently was that, in ewes, prolapse of the vagina or uterus appears to be associated with a calcium-phosphorus imbalance. A deficiency of phosphorus or an improper balance of the two minerals is said to result in relaxation of the ischial ligaments with consequent prolapse of the gravid uterus. Therapeutic use of phosphates in the ration where this condition is prevalent is reported to stop its occurrence.—[A. Charton, et al.: *Colloque sur les troubles de la nutrition. Rec. vét., 1/1, (Nov., 1955): 953-1013.*]—R.F.V.

Use of Acethylmethionine in Ketosis and Milk Fever

The author reports on his results with a lipotropic agent in the treatment of ketosis and milk fever in cattle. He states that a single intravenous injection of 50 cc. of 20 per cent acethylmethionine is usually ample to reverse the symptoms of this metabolic disorder. Improvement is frequently observed within five to six hours after administration. About 10 per cent of the animals require repeated treatment within three days.

For milk fever, he has found the following formula useful.

Calcium chloride solution (50%)	80 cc.
Solucamphor	10 cc.
Epinephrine 1:1,000	1 cc.
Acethylmethionine solution (20%)	50 cc.

This is administered intravenously. If re-treatment is necessary, 240 cc. of a 20 per cent solution of calcium acethylmethionate is administered, also intravenously.—[M. A. Lecomte: *Notes sur l'Étude Comparée des Cétoses et des Hypocalcémies. Bull. Acad. Vét. (Oct., 1955): 401-407.*]—R.F.V.

Studies on Bovine Mastitis

This article reports the results of studies about the conduct of 81 microorganisms isolated from cows affected with mastitis, in presence of various concentrations of penicillin and streptomycin. The following results were observed: of 32 staphylococci, 11 were penicillin-resistant and 7 were streptomycin-resistant; of 25 streptococci, 13 were penicillin-resistant and 13 were streptomycin-resistant; of 7 samples of *Corynebacterium pyogenes*, 5 were penicillin-resistant and 5 were of little sensitivity to streptomycin; in a group of 15 coliform organisms, 14 were penicillin-resistant and 7 were streptomycin-resistant. Two diphtheroid microorganisms were resistant to both antibiotics. Some strains were both penicillin- and streptomycin-resistant.—[Paulo M. G. de Lacerda, Jr.: *Studies on*

Bovine Mastitis. II. The Sensibility of Bovine Mastitis Microorganisms to Penicillin and Streptomycin. Rev. da Fac. de Med. Vet., 5, (1953-1954): 65-72.]—G.T.E.

BOOKS AND REPORTS

The Role of Algae and Plankton in Medicine

Considerable has been written on the proposed use of algae and plankton as a new source of food, but little attention has been paid to the health values of these lower forms of life.

In ancient times, the Chinese used seaweed for goiter, the Romans for gout, and American Indians as a source of salt. In more recent times, alginates have been used for wound dressing and lubricant jellies, but these products have not been explored as a source of medicine nor have the toxic algae been explored. They may be an etiological factor in "sway back" of lambs fed on seaweed and in the hepatitis and cirrhosis of animals suffering with "water bloom" toxicity. Except for these items, this little text has no practical references to medicine.—[*The Role of Algae and Plankton in Medicine. By Morton Schwimmer and David Schwimmer. 85 pages. Grune and Stratton, Inc., 381 Fourth Ave., New York 16, N. Y. 1955. Price \$3.75.*]

Colics of the Horse

This concise and practical little book on the painful processes associated with digestive disorders of the horse is directed at practitioners, but it discusses reasons and methods in sufficient detail to also have great value to the veterinary student. The great reduction in the number of draft horses and the resulting change in present methods of handling and feeding most horses makes a new study of the subject of value. The approach reflects experience with colics in Europe as well as in the eastern United States. The emphasis on proper diagnosis is commendable, particularly the importance of utilizing the stomach tube and rectal palpations in locating the source of the pain. It is well stated that "an examination of a colic case without rectal exploration is a great negligence."

An item which will probably be read by practitioners, with interest but with reserved judgment, concerns the therapeutic use of external massage, particularly to "relieve the overloading" of the stomach; also the use of "poultices." An important omission is the "phytoconcrements" composed of the fibers of coarse plants, particularly the stems of sweet clover, which so commonly cause impactions of the small colon.

However, this text is commendably complete and practical and should be read by all who may do any equine practice.—[*Colics of the Horse. By Frank Kral and Walter E. LaGrange. 143 pages. Published by the authors, University of Pennsylvania, School of Veterinary Medicine, Philadelphia, Pa. 1956. Price not given.*]

THE NEWS



Professor Herman Ziegler (left), dean of the Veterinary Faculty, University of Bern, and Professor W. Weber, secretary to the Veterinary Faculty and head of the Department of Animal Husbandry, University of Bern.



Dean Schonberg (left) and Professor Kurt Wagener, Veterinary College, Hannover, Germany. "Pylorus" is the entrance to the student canteen where soft drinks and sandwiches are served.

Veterinarians Visited by Dr. and Mrs. Lloyd C. Moss on Their Trip Around the World

Dr. Lloyd C. Moss, of the School of Veterinary Medicine, Colorado A. & M. College, and Mrs. Moss have completed the first leg of their trip around the world. They report



Dean W. M. Mitchell, Royal (Dick) School of Veterinary Studies, University of Edinburgh.



Dean G. H. B. Teunissen, Veterinary Faculty, University of Utrecht, Holland.



Professor Hugo Keller, assistant dean, Veterinary Faculty, Justus Liebig Hochschule, Giessen, Germany.



Dean J. G. Wright, Faculty of Veterinary Science, University of Liverpool.



Director F. Waldike Nielsen, chief veterinary officer, Denmark.

they have thoroughly enjoyed their visits with veterinarians at veterinary institutions in Europe, the British Isles, and the Scandinavian countries.

Photographs of some of the prominent veterinarians Dr. and Mrs. Moss visited have been furnished the JOURNAL by Dr. Moss and are reproduced on these pages.

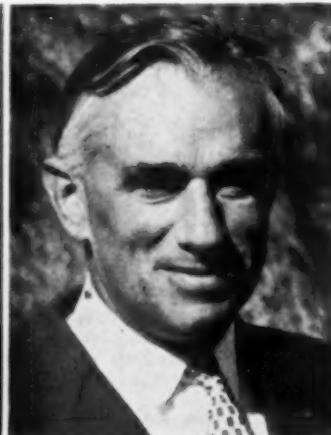
The Mosses are now in South Africa and will soon depart for Australia and New Zealand on their way home.



Dean Jean Bouckaert, Veterinary Faculty, University of Ghent, Belgium.



Professor Werner Leemann, dean, Veterinary Faculty, University of Zurich.



Professor J. A. Nicholson, dean of the Veterinary College, Dublin, Eire.

Dr. Kuttler Honored for Contribution to Livestock Disease Control

A citation recognizing the outstanding contribution he has made to the progress of livestock disease control programs was presented to Dr. A. K. Kuttler during the annual meeting of the National Brucellosis Committee held in Chicago, Feb. 16, 1956.

DR. A. K. KUTTLER

THROUGH your years of leadership of the national brucellosis eradication program, you have set an exceptional example of dedicated and effective public service. Ten years ago, the incidence of brucellosis was increasing and double that of 1941. On the question of eradication, the livestock industry was confused and divided. The country's basic livestock health philosophy was in jeopardy. Through your persistent yet patient and conciliatory personal effort, differences were reconciled and the nation again directed toward a brucellosis-free status.

In recognition of and appreciation for your eminent service to the health of mankind and the livestock industry of the United States, the delegates to the National Brucellosis Committee, in annual meeting assembled this 16th day of February 1956, present this testimonial.

Howard C. Clarenburg

President

NRB
AGRICULTURAL RESEARCH SERVICE, U. S. DEPARTMENT OF AGRICULTURE
AMERICAN AGRICULTURAL EDITORS ASSOCIATION
AMERICAN CATTLE BUREAU FEDERATION
AMERICAN DENTAL ASSOCIATION
AMERICAN MEDICAL ASSOCIATION
AMERICAN NATIONAL CATTLEMEN'S ASSOCIATION
ASSOCIATION OF STATE VETERINARIANS
ASSOCIATION OF STATE-GRANT COLLEGES AND UNIVERSITIES
AGRICULTURE SERVICE U. S. DEPARTMENT OF AGRICULTURE
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NATIONAL SCIENCE COUNCIL OF ARTIFICIAL INSEMINATION
NATIONAL VETERINARIANS IN PRACTICE REGISTRY
NATIONAL BEEF MARKETING COMMISSION
NATIONAL INDEPENDENT MEAT PACKERS ASSOCIATION
NATIONAL SWINE STOCK AND MEAT BOARD
NATIONAL VETERINARY MEDICAL EDUCATION
NATIONAL RESEARCH COUNCIL
PURIFIED DAIRY CATTLE ASSOCIATION
TEXAS AND SOUTHWESTERN CATTLE RASHERS
NATIONAL CATTLE COUNCIL
UNITED STATES LIVESTOCK SANITARY ASSOCIATION
UNITED STATES PUBLIC HEALTH SERVICE

This award acknowledges the leadership Dr. Kuttler has furnished in making brucellosis eradication an objective toward which all segments of the livestock industry are willing to work. It typifies the high regard and esteem Dr. Kuttler has engendered among those with whom he has been associated in both official and unofficial capacities.

Effective Feb. 27, 1956, Dr. Kuttler was designated as the state-federal livestock disease-control official in Utah, with headquarters in Salt Lake City. Dr. C. K. Mingle has been named chief, Brucellosis Eradication Section, ARS, Washington, D. C., the position formerly held by Dr. Kuttler.

Symposium of the International Association of Veterinary Food Hygiene

A symposium of the International Association of Veterinary Food Hygiene will be held at Utrecht, Netherlands, Aug. 27 to Sept. 1, 1956.

The International Association of Veterinary Food Hygiene was established as a recommendation of the Eleventh International Veterinary Congress held in Stockholm in 1953.

The program will include discussions of the principles of meat, fish, and milk hygiene; hygiene of eggs and egg products; principles of bacteriological meat inspection; and preservation of foods of animal origin.

Dr. A. Clarenburg of Utrecht is serving as chairman.

s/C. H. PALS.

Officers of Women's Veterinary Medical Association

The following officers will serve the Women's Veterinary Medical Association during 1956: Irene Kraft, White Plains, N. Y., eastern vice-president; Lorraine B. Nielsen, Columbus, Ohio, central vice-president; Tensie Ford Rowan, Weiser, Idaho, western vice-president; Dianne Davison, Marietta, Ga., southern vice-president; Jo Browne Walker, Sacramento, Calif., president; Patricia O'Connor, Stapleton, N. Y., secretary; and Lois Calhoun, East Lansing, Mich., treasurer.

At the ninth annual meeting of the Women's V.M.A. during the AVMA convention in Minneapolis, the annual award of \$50 was presented to Dr. Virginie Buff D'Apice, of Sao Paulo, Brazil, for her most distinguished service to the veterinary profession.

s/M. LOIS CALHOUN, Secretary

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. Agricultural Research Service are reported as of Feb. 17, 1956.

TRANSFERS

Charles E. Titus, from Cedar Rapids, Iowa, to Postville, Iowa.

Edward J. Wilson, from Baltimore, Md., to Columbus, Ohio.

James M. Fancher, from Harrisburg, Pa., to Augusta, Maine.

Afleck J. MacGillivray, from Clark Mills, N. Y., to Bedford, Va.

Willard C. Higby, from Bedford, Va., to Clark Mills, N. Y.

LeRoy V. Carlyle, from Madison Wis., to Honolulu, Hawaii.

Edward A. Carbrey from Trenton, N.J., to Des Moines, Iowa.

RETIREMENTS

John J. Merwick, Chicago, Ill.

Carleton G. Libby, Baton Rouge, La.

AMONG THE STATES AND PROVINCES

Alabama

State Association.—The forty-ninth annual meeting of the Alabama Veterinary Medical Association was held March 18-20, 1956, at the Whitley Hotel in Montgomery.

The following out-of-state speakers addressed the group: Taylor A. Bragg, Jr., Monroe, Ga.; Terry S. Ozier, Jackson, Miss.; Victor J. Cabasso, Lederle Laboratories, Pearl River, N.Y.; S. F. Scheidy, Sharp and Dohme, West Point, Pa.; John P. Fox, Tulane University, New Orleans, La.; J. H. Scruggs, Atlanta, Ga.; Brig. General Wayne O. Kester, Washington, D.C., president-elect of the AVMA; Armstead J. Selden, Washington, D.C.; Asa Winter, ARS, Arlington, Va.

The program included presentations by Auxiliary President Mrs. R. G. Isbell, Gadsden; Attorney E. J. Azar, Montgomery; Civil Defense Directors Pitt Tyson Manor and Clay Deans of Montgomery; Lt. Col. R. L. Hummer, Gunter Air Force Base; C. J. Rehling, state toxicologist, Auburn; J. B. Taylor, associate state veterinarian, Elba; Gordon Wallace, Veterinary Public Health Department, Montgomery; Dean R. S. Sugg, J. E. Greene, W. J. Gibbons, and M. K. Heath of the A.P.I. School of Veterinary Medicine, Auburn.

s/M. K. HEATH, *Secretary*.

Central Association.—The February 2 meeting of the Central Alabama Veterinary Medical Association was held at the Maxwell Officer's Club, with Dr. Neil G. MacEachern, president, presiding. Major J. L. Curtis, U.S.A.F., M.C., chief ophthalmologist, 3810th U.S.A.F. Hospital, spoke on diseases of the human eye and the latest methods of treatment. An interesting report of veterinary public health activities within the state was given by Dr. Gordon Wallace, public health veterinarian, Alabama State Health Department. Lieutenant Colonel Robert L. Hummer, Gunter Air Force Base, gave a progress report on plans for the coming state Association meeting of which the Central Alabama Veterinary Medical Association is the host.

s/JOE T. WILLIAMS.

Arizona

Central Association.—The February 14 meeting of the Central Arizona Veterinary Medical Association was held at the Bob Finch V.F.W. hall in Tempe. Mr. Cecil Fry, of the Purina Co., presented two films, "The Rumen Story" and "The Use of Stilbestrol in Cattle Feeds."

Dr. Howell Hood of Tempe was host to the group.

s/KEITH T. MADDY, *Secretary*.

California

San Fernando Valley Association.—The new officers of the San Fernando Valley Chapter of the Southern California Veterinary Medical Association are: Howard Taylor, Los Angeles, president; Richard Hawes, North Hollywood, past-president; Robert Button, Van Nuys, vice-president; and John Chudacoff, Van Nuys, sec-

retary-treasurer. The group meets on the second Friday of each month at the Casa Escobar Restaurant in Studio City.

s/JOHN CHUDACOFF, *Secretary*.

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Dr. A. M. McCapes (right), president of the California State Veterinary Medical Association, being vaccinated with the new Flury rabies vaccine by Dr. Hilary Koprowski, chairman of the Expert Committee on Rabies of the World Health Organization. During the California State V. M. A. meeting, Jan. 23-25, 1956, 200 veterinarians were vaccinated with this vaccine which produces long-lasting protection.

Indiana

Michiana Association.—The new officers of the Michiana Veterinary Medical Association are: J. J. Fishler, Elkhart, president; Bruce Hostrawser, South Bend, president-elect; P. W. Hough, South Bend, vice-president; and J. M. Carter, Elkhart, secretary-treasurer.

At the February 9 meeting in South Bend, Dr. Frank Booth of Elkhart spoke on ethics, and motion pictures were shown of the Michiana group on picnics and swimming. Dr. Susanne Jacoby, Constantine, Mich., and Dr. Nicola Storm, Niles, Mich., were each presented with a large silk American flag as a gift from the Michiana Association complimenting both on becoming American citizens.

s/J. L. KIXMILLER, *Resident Secretary*.

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Refresher Course on Swine Diseases.—A refresher course on swine diseases was held in conjunction with the February 7 meeting of the Tenth District (Ind.) Veterinary Medical Association in Newcastle.

Drs. Fred Hall, L. M. Hutchings, and L. P. Doyle of the Department of Veterinary Science, Purdue University, were program speakers.

s/J. L. KIXMILLER, *Resident Secretary*.

Kansas

Alumni Senior Seminary Day.—The sixth annual alumni senior seminar day for the Kansas State College School of Veterinary Medicine was held February 4. Some of the speakers who discussed various aspects of the different fields of veterinary medicine were: Ralph L. Messer, Kansas City, small animal practice; M. P. Reeve, Garden City, general practice; F. O. Steele, Wichita, biological vaccine production; and L. H. Smith, Topeka, ARS, U.S.-D.A., federal regulatory measures.

Kentucky

Rabies in Foxes.—Dr. R. L. Hectorne, director of veterinary public health for the Kentucky State Health Department, reported that of the 44 cases of rabies reported in Kentucky in January, 1956, 22 were in foxes and the others were in dogs, a bobcat, skunk, pony, cat, and some cattle. Since July, 1954, when the state made rabies vaccination for dogs compulsory, 206,000 dogs have been immunized, resulting in a sharp reduction in canine rabies in the past two years. In an effort to control rabies in foxes, game wardens use carbon monoxide gas bombs to kill the animals in their dens.

s/T. J. STEARNS, Resident Secretary.

Changes in Brucellosis Program.—Two significant changes in the brucellosis control program in Kentucky have been made due to a shortage of funds. The first of these changes is the removal of indemnity payments for infected cattle sent to slaughter; the second is the lifting of the requirement for blood-testing calves before they are vaccinated. The state's new commissioner of agriculture, Ben J. Butler, indicated that the adoption of these two measures will permit the brucellosis control program to continue to the end of the year.

s/T. J. STEARNS, Resident Secretary.

Veterinary Students Educated at A.P.I.—Dr. F. E. Hull of the University of Kentucky, who has charge of the preveterinary education of Kentucky students, reports that the cost to the state for the education of ten students sent to the veterinary school at Alabama Polytechnic Institute each year is \$1,000 per student per year or \$40,000 per year for the 40 students in the four classes.—*Southern Regional Education Board News*, Dec., 1955.

Massachusetts

State Association.—The regular meeting of the Massachusetts Veterinary Association was held February 29 at the Hotel Beaconsfield in Boston. The guest speaker, Meyer Saklad, M.D., chief anesthesiologist and head of the Department of Anesthesiology, Rhode Island State Hospital, discussed "Anesthesia and the Practitioner."

At the January 18 meeting, the following officers were elected: Paul Granholm, Weston, president; Herbert Tabbut, Wellesley Hills, first vice-president; C. Lawrence Blakely, Needham, second vice-president and secretary-treasurer.

s/C. LAWRENCE BLAKELY, Secretary.

Michigan

Postgraduate Conference.—The thirty-third annual postgraduate conference sponsored by the College of Veterinary Medicine, Michigan State University, was held Jan. 18-19, 1956, at the Kellogg Center for Continuing Education, in East Lansing, with 584 veterinarians in attendance.

In addition to faculty members of the College of Veterinary Medicine, Michigan State University, the following participated in the Conference program: R. E. Brown, Lansing; S. W. Donaldson, M.D., Detroit; H. P. Eames, Manchester; L. E. Fisher, Chicago; R. A. Gesbert, Washington, D. C.; J. H. Gregg, Nappanee, Ind.; H. G. Hodges, Ithaca, N. Y.; R. E. Kader, Flint; Clayton Lewis, M.D., Lansing; J. L. McAuliff, Cortland, N. Y.; J. E. Mosier, Manhattan, Kan.; R. L. Mowry, Sturgis; D. F. Peigh, Chicago; S. F. Scheidy, West Point, Pa.; and A. C. Todd, Madison, Wis.

s/R. D. BARNER.

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Southeastern Association.—At the February 22 meeting of the Southeastern Michigan Veterinary Medical Association, Dr. William Magrane, Mishawaka, Ind., discussed "Canine Ophthalmology."

s/GILBERT MEYER, Secretary.

Minnesota

State Society Officers.—The new officers of the Minnesota State Veterinary Medical Society are: L. H. Pint, Austin, president; H. E. Schwermann, New Ulm, president-elect; G. G. Hartle, Minneapolis, first vice-president; Glen Nelson, New Richland, second vice-president; and B. S. Pomeroy, St. Paul, secretary-treasurer. Drs. R. S. Kufrin, Benson; V. K. Jensen, Montevideo; and V. L. Dahl, Arlington, were elected to the board of trustees.

There were 655 registered at the meeting including women and students. Thirty-one new members were admitted to the Society and eight men with 40 years of membership were elected life members. These included J. N. Campbell, St. Paul; J. R. Berggren, Sr., Baldwin, Wis.; A. Feist, St. Paul; M. C. Green, Spring Grove; H. P. Hansen, Austin; B. J. Lattimer, Springfield; J. H. Elmes, Eagle Bend; and John A. Jaeger, Mesa, Ariz. Mr. Alfred Stedman, St. Paul, one of the outstanding agricultural writers of the Northwest, was elected to honorary membership.

s/B. S. POMEROY, Secretary.

Nevada

State Association.—The annual meeting of the Nevada State Veterinary Medical Association was held Feb. 10-11, 1956, in Reno, with 25 members and 10 guests in attendance.

The program consisted of the following speakers and their subjects: W. F. Fisher, Reno (report of 1955 AVMA meeting in Minneapolis); E. E. Maas, Reno (progress of brucellosis control program); E. L. Randall, food and drug commissioner (better control of veterinary drugs); Reginald A. Stocking, Los Angeles, Calif. (small animal surgery); Frank M. Brennan, Chino, Calif. (large animal surgery); Kenneth L. Kuttler, Reno (animal disease problems in Kenya). The motion pictures, "An Approach to the Control of Canine Neuro-encephalomyopathy" and "The Physiological Debridement of Necrotic Tissue," were shown.

The following officers were elected: Murray H. Phillipson, Las Vegas, president; F. N. Neville, Jr., Winnemucca, vice-president; and W. R. Sheff, Reno, secretary-treasurer.

S/EDWARD RECORDS, *Retiring Secretary.*

New Brunswick

New Laboratory at Mount Allison University.—A new laboratory for the Maritime Area Branch of the Animal Pathology Division was officially opened on Jan. 6, 1956. This three-story building, situated on the Mount Allison



The new laboratory of the Maritime Area Branch of the Animal Pathology Division at Mount Allison University in Sackville, N. B.

University campus in Sackville, was designed to fit in with the architecture of the surrounding buildings on the campus.

The basement of the building contains an auditorium with a seating capacity of 100, a postmortem room, and an incinerator room; the first floor has offices, two research laboratories, and a general service laboratory; the second floor, a library, a filing room, animal room, and a section containing Horsfall units

for the diagnosis of virus diseases; and the top floor contains fan rooms for ventilation and storage space.

The area serviced by this laboratory includes the four Atlantic provinces. Between 1948, when the Maritime Area Laboratory was first established, and the present time, the laboratory was housed in temporary quarters in one of the college buildings. The increased facilities available in the new building will permit the undertaking of more complex research problems and the provision of a greater variety of diagnostic services.

S/J. F. FRANK, *Resident Secretary.*

Pennsylvania

Keystone Association.—On February 22, the Keystone Veterinary Medical Association met at the University of Pennsylvania School of Veterinary Medicine to hear Gladwyn Graham, M.D., discuss "Maxillo-Facial Surgery," with illustrations.

S/RAYMOND C. SNYDER, *Corresponding Secretary.*

Quebec

Veterinary Inspectors Study Mastitis.—The veterinary inspectors of the division of Food Inspection and Health Service of the City of Montreal recently spent a day at the School of Veterinary Medicine at St. Hyacinthe studying mastitis. They took advantage of the opportunity to visit the new buildings and all departments of the school.

S/J. ST. GEORGES.

STATE BOARD EXAMINATIONS

Texas.—The Texas State Board of Veterinary Medical Examiners announces that the next veterinary licensing examination will be held on May 28-30, 1956, at Texas A. & M. College, College Station, Texas. The completed applications must be returned to the following address not later than 30 days before the examination date. Requests for applications and additional information should be addressed to: Mr. T. D. Weaver, executive secretary, Texas State Board of Veterinary Medical Examiners, 520 Littlefield Bldg. Austin 15, Texas.

Ohio.—The Ohio State Board of Veterinary Examiners will conduct an examination on June 5 and 6, 1956, in the Clinic Building, College of Veterinary Medicine, Ohio State University, Columbus. Applicants must be present at 8:00 a.m. on the first day. Application forms may be obtained from the Office of James R. Hay, Secretary *ex officio*, Division of Animal Industry, Room 709, State Office Building, Columbus 15, Ohio. All application forms must be returned to the secretary not later than May 5, 1956.

VETERINARY MILITARY SERVICE



The ninety-second class of veterinary officers completed (Feb. 10, 1956) the course at the Army Medical Service Meat and Dairy Hygiene School in Chicago. The class visited AVMA headquarters, Dec. 21, 1955, and heard talks on the work of the Association.

First row (front, left to right)—Capt. Wiggo Christensen, assistant adjutant; Capt. Harrison S. Martin, instructor; Lt. Col. Wayne D. Shipley, director of training; Col. Philip R. Carter, commandant; Major Roy W. Upham, instructor; Major George T. Dalziel, instructor; Major James B. Young, instructor; Major Dan Hightower, instructor.

Second row—S.C.C. Frank J. Smith; First Lieutenants John R. Conley, James F. Mock, Joseph S. Wheatley, James K. Payne, Donald J. Smylie, Fezilullah Ahdieh, Imperial Iranian Army; M/Sgt. John F. Moore, assistant instructor.

Third row—First Lieutenants David D. Herrick, Dale C. Gigstad, David M. Drenan (U.S.A.F.), Theodore P. Kistner, James T. Yoder, Winfred A. Andrews.

Fourth row—First Lieutenants John R. Ferguson, Carroll K. Weich, Byron E. Denholm, Alfred O. Gigstad, Robert B. Hillman, Donald T. Kerr.

DEATHS

★**Frank L. Cissell** (KCV '11), 67, Perryville, Mo., died Jan. 13, 1956. Dr. Cissell was a member of the Missouri Veterinary Medical Association and of the AVMA.

★**R. M. Hofferd** (CVC '17), 60, Cedar Rapids, Iowa, died Jan. 28, 1956. Dr. Hofferd was a member of the Iowa State, Eastern Iowa, East Central, and Southeastern Iowa Veterinary Medical Associations, the Midwest Small Animal Association, and of the AVMA.

★**Clifford L. Lehman** (CVC '17), 60, Flanagan, Ill., died Jan. 8, 1956. Dr. Lehman had practiced in Flanagan for almost 40 years. He was a member of the Illinois State Veterinary Medical Association and of the AVMA (admitted in 1918). His widow survives.

Charles A. Mohr (KCV '11), 66, Tulsa, Okla., died Feb. 11, 1956. Dr. Mohr, a general practitioner, had been a member of the AVMA.

Robert F. Okershauser (MCK '07), 70, Milwaukee, Wis., died in December, 1955. Dr. Okershauser was a veteran of World War I. He is survived by his widow.

Edgar W. Powell (UP '00), 79, Bryn Mawr, Pa., died Jan. 24, 1956. Dr. Powell was a well-known horseman and fox hunter and judged at horse shows in the United States and Canada. He is survived by his widow, three daughters, one son, and 11 grandchildren.

★**Philip H. Riedel** (IND '11), 66, San Antonio, Texas, died Jan. 29, 1956. Dr. Riedel entered the Army in 1918 and retired in 1940 with the rank of lieutenant colonel. During his Army career he served at the New York General Inspection Depot, Brooklyn; Fort Bliss, Texas; Fort Jay, N. Y.; and Fort Mason, Calif. At the time of his retirement, he was depot veterinarian at the San Antonio General Depot. He was admitted to the AVMA in 1911. Dr. Riedel is survived by his widow and one son.

★**Herman W. Schmees** (USC '21), 61, Oklahoma City, Okla., died Jan. 19, 1956. Dr. Schmees had served with the U.S.D.A. Bureau of Animal Industry. He was admitted to the AVMA in 1927.

★ Indicates members of the AVMA.

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Department of Veterinary Medicine

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ORGANIZATION SECTION

WOMEN'S AUXILIARY

President—Mrs. Earl N. Moore, 636 Beall Ave., Wooster, Ohio.
Secretary—Mrs. F. R. Booth, 3920 E. Jackson Blvd., Elkhart, Ind.

Mrs. Veterinarian Five Years Old.—We bade farewell to our many friends, settled our four little girls comfortably in the car, and took one long last look at the small quonset hut that had been our home for six years. Graduation from Colorado A. & M. had finally come and Fort Collins was just a town in our past. Now we headed west to Salem, Ore., where my husband had accepted a job with a veterinarian who had been in practice there for 25 years. We were eager to get back to Oregon, our home state.

Six months after we settled in Salem, the older doctor retired and sold his practice to my husband. Being on our own was what we had hoped for but the opportunity had come sooner than we had ever imagined. These past five years have meant a lot of work, but it has worked out very well and we are hoping the next five years will be even better.

I am thankful for the course offered to the

wives while my husband was in school, because I have been called upon quite often, in the night, to assist in an operation or to hold an animal while a leg is set. Working together now as we did at school brings us great satisfaction. Even the girls enjoy being of help to their father, if only to hold the test tubes while he draws the blood from a cow for the brucellosis test.

Buying a practice is not all "gravy" as there are people who think you are too young or inexperienced, so they take their business elsewhere; thus we had to build a practice. In order to help make our name known, I joined just about all the organizations to which I was eligible, trying to be careful not to let them interfere with my family life. We found the service clubs and the P.T.A. were places where we could serve and also receive great benefit. A wife can be of real service, public relations-wise, both to the public and her husband.

Shortly after coming to Salem, the veterinarians decided to meet monthly, so that they could discuss their problems and also have educational programs to help them in their practices. The wives also decided to meet the same night as the men. Now, they meet with

(Continued on p. 20)

AVMA Ninety-Third Annual Meeting, San Antonio—October 15-18, 1956

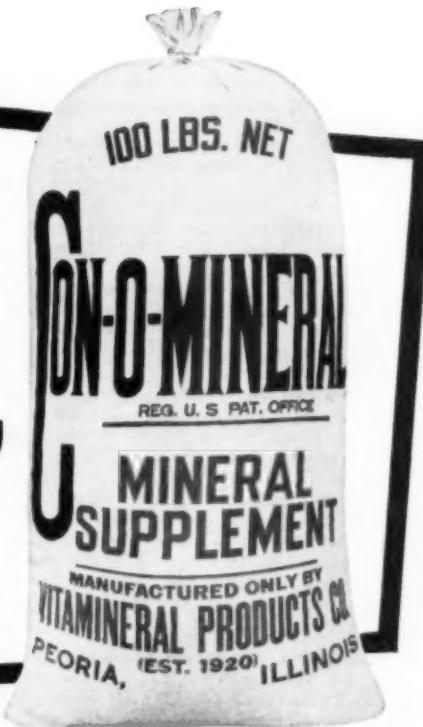


Historic Alamo Plaza in the heart of downtown San Antonio. The Alamo is the second low building from right.



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ORGANIZATION SECTION

(WOMEN'S AUXILIARY—continued from p. 18)

us after their business session for a social time, and in this way we have all become better acquainted and regard each other as close friends. The meetings have developed into a valley gathering, with approximately 25 veterinarians and their wives attending every month.

We try to attend all three state meetings because there my husband can learn about the latest techniques and drugs and thus serve his clients better; he also gets advice from older veterinarians which is helpful to him.

While at the Oregon state meetings I attended the women's auxiliary and became active in their group. I felt it an honor to be elected the vice-president in 1954, and then the 1955 president, and re-elected to serve again in 1956. I feel it is important for a wife to take part in the state auxiliaries and become better acquainted with women whose problems are much the same as her's.

I have assisted my husband many times with small animals but I believe my biggest thrill came when he called one morning to say a cesarean section had to be done on a cow and he needed my help. We hurried to the farm to find the cow down by the fence, which ran along the side of the highway with cars rushing

Intermountain Auxiliary.—The annual meeting of the Women's Auxiliary to the Intermountain Veterinary Medical Association was held at the Hotel Utah in Salt Lake City on



Officers of the Women's Auxiliary to the Intermountain V.M.A. are (seated, left to right)—Mrs. Grant O. Boom, first vice-president; Mrs. James W. Bailey, Moscow, second vice-president; (standing) Mrs. Douglas H. McKelvie, secretary; and Mrs. George N. Glover, president.

by. After an hour and a half of surgery, the results were a healthy calf, a half groggy cow, and a satisfied farmer.

By keeping a duplicate set of books at home I am aware of the calls my husband has made during the day. This comes in handy if a client calls our home when the doctor is gone; then I at least know what he is talking about. I have never given advice to clients concerning their animals but many times have had to listen sympathetically to their pets' latest ailments. We try to keep the telephone free when my husband is at home, as there is nothing more aggravating than to be unable to reach a doctor because his telephone is always busy; this sometimes poses a problem with our teenage daughter.

The life of a veterinarian's wife is a real challenge. No social activities can ever be definitely planned. One has to accept gracefully putting dinner back on the stove, cancelling engagements, or getting a "fill-in" for a bridge party. But we wouldn't trade this life for a drab eight-to-five job. Now that I am "Mrs. Veterinarian Five Years Old" I have learned to cope with these problems and try to keep the family life as normal as possible.

S/MRS. AUSTIN W. EIVERS.

• • •
Jan. 16-18, 1956, with 67 members and one guest registered.

Following registration, Mrs. Jean C. Flint of Fort Collins, Colo., gave an address of welcome at a joint meeting with the Association. At noon, a luncheon was held on the roof garden of the Hotel Utah, with Mrs. Douglas McKelvie of Salt Lake City and Mrs. J. M. Twitchell of Provo as co-chairmen.

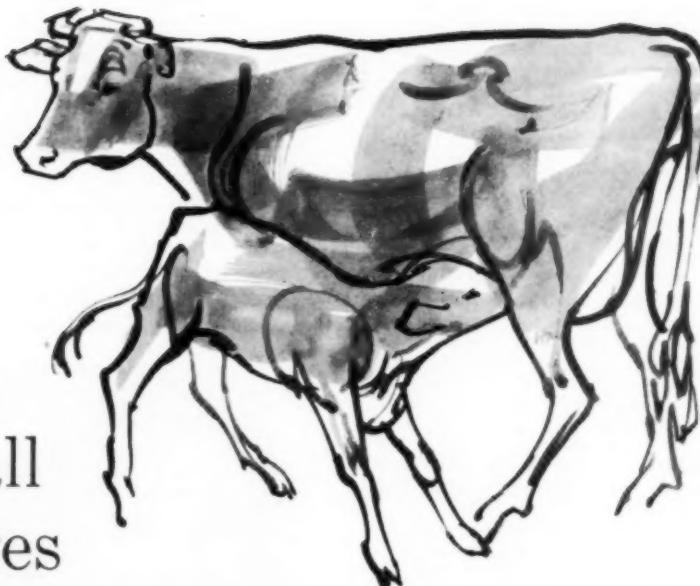
The evening business meeting included a report on the meeting of the AVMA Auxiliary in Minneapolis by Mrs. Jean C. Flint; an illustrated lecture by Mrs. C. L. Jones on her recent tour of Europe with the Tabernacle Choir. The following officers were elected: Mrs. George N. Glover, Torrington, Wyo., president; Mrs. Grant Boom, Salt Lake City, president-elect; Mrs. James Bailey, Moscow, Idaho, vice-president; and Mrs. Douglas McKelvie Salt Lake City, secretary-treasurer.

On January 17, the annual birthday luncheon was held in the Empire Room of the Hotel Utah with Mrs. Jack Palmer of Salt Lake City and Mrs. George Glover as co-chairmen. Mrs. R. C. Swalberg of Spanish Fork, Utah, and Mrs. O. Wennergren of Logan, Utah, reminisced about the growth of the Intermountain Auxiliary. They recalled that some 25 years ago there were two members present—Mrs. Sven Nelson, the first program chairman, and Mrs. O. Wennergren, the only guest. Attendance at this year's meeting was 68 which reflects a steady and rewarding growth.

S/MRS. DOUGLAS MCKELVIE, Secretary.

(Continued on p. 22)

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ORGANIZATION SECTION

(WOMEN'S AUXILIARY—continued from p. 20)

Michiana Auxiliary.—The new officers of the Women's Auxiliary to the Michiana Veterinary Medical Association are: Mrs. Harry Magrane, II, of Mishawaka, Ind., president; Mrs. Ray Worley, South Bend, Ind., vice-president; Mrs. Louis Boyer, Hartford, Mich., secretary; and Mrs. Stan Williamson, South Bend, treasurer.

s/MRS. LOUIS BOYER, *Secretary*.

• • •

Northeastern Ohio Auxiliary.—Members of the Women's Auxiliary to the Cuyahoga County Veterinary Medical Association were hostesses to the Northeastern Ohio Women's Auxiliary on March 28 during the veterinary symposium of the Northeastern Ohio V.M.A. Entertainment included a discussion and demonstration on correct apparel for the modern woman by Elizabeth Kardos, who conducts the column on fashion and personality in the *Cleveland Plain Dealer*; a luncheon; and a cocktail hour. The morning was left free for shopping.

• • •

Ontario Auxiliary.—The Women's Auxiliary to the Ontario Veterinary Association held its eleventh annual meeting in the Royal York Hotel, Toronto, on January 28. At the business meeting, presided over by the president, Mrs. Hawke, a donation of \$50 was made to the Canada V.M.A. Student Loan Fund and \$25 each to the AVMA Women's Auxiliary Student Loan Fund and to the AVMA Research Fund.

Mrs. W. G. Stevenson reported on the meeting of the Women's Auxiliary house of representatives in Minneapolis during the AVMA convention, and Mrs. A. E. Cameron reported on the Canadian V.M.A. convention in Saskatoon, Sask. It was decided to start an animal and bird album club for children of members of the Ontario Veterinary Association, their books to be judged and prizes awarded at the annual meeting in January, 1957.

The following officers were elected to serve during 1956: Mrs. R. H. Wright, Dundas, president; Mrs. W. G. Stevenson, Guelph, first vice-president; Mrs. R. J. Ketchell, Port Credit, second vice-president; Mrs. J. C. Dancey, Aylmer, secretary; and Mrs. S. T. Bodendistel, Guelph, treasurer.

s/(Mrs. J. C.) LEONE DANCEY, *Secretary*.

• • •

Tennessee Auxiliary.—The Women's Auxiliary to the Tennessee Veterinary Medical Association held its annual meeting at the Andrew Jackson Hotel in Nashville on Jan. 15-17, 1956. Mrs. C. M. Rodgers, Blandinsville, Ill., membership secretary of the AVMA Auxiliary, was the guest speaker.

The group voted to contribute \$25 to the Student Loan Fund, \$15 to Auburn, and \$10 to the AVMA Research Fund.

The following officers were elected to serve during 1956: Mrs. H. W. Nance, Lawrence-

burg, president; Mrs. Karon Jennings, McMinnville, vice-president (central Tenn.); Mrs. Tyler Young, Kingsport, vice-president (eastern Tenn.); Mrs. A. M. Creswell, Union City, vice-president (western Tenn.); Mrs. Harold Caudle, Nashville, treasurer; and Mrs. W. C. Cook, Knoxville, secretary.

Members enjoyed a hospitality hour, a tour and luncheon, the annual banquet and dance, and a breakfast.

s/(Mrs. W. C.) CAMILLE COOK, *Secretary*.

• • •

Texas Auxiliary.—The annual meeting of the Women's Auxiliary to the Texas Veterinary Medical Association was held at the Baker Hotel in Mineral Wells, Feb. 5-7, 1956. Despite traffic-stopping snow and sleet storms immediately preceding the meeting, approximately 85 women registered.



Mrs. G. W. Parker, San Antonio, president of the Women's Auxiliary to the Texas V.M.A.

Rio Grande Valley veterinarians were hosts at the Sunday evening reception and cocktail hour on the Roof Garden; they served fresh orange juice from their own orchards.

Honored guests at the meeting were the president of the AVMA Women's Auxiliary, Mrs. Earl N. Moore, Wooster, Ohio; the first vice-president, Mrs. Lewis H. Moe, Stillwater, Okla.; and the third vice-president, Mrs. U. E. Marney, San Antonio.

Contributions were approved to the Auxiliary Student Loan Fund and to the AVMA projects.

Officers elected and installed for 1956 are: Mrs. G. W. Parker, San Antonio, president; Mrs. A. C. Sears, Fort Worth, president-elect; Mrs. H. E. Jameson, Galveston, vice-president; Mrs. W. W. Armistead, College Station, secretary-treasurer; and Mrs. M. C. Harkins, Crockett, corresponding secretary.

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21st Edition, Edited by Charles A. Perera, M.D. 520 pp., 378 figs., \$6.00

J. Am. Vet. M.A., December 1953:

"This book is an example of the human medical literature that can be advantageously used by the veterinary student and clinician. The text was apparently designed to provide an introduction to the subject of ophthalmology and a convenient reference source for the major aspects of ocular diseases.

"Its concise style and systematic presentation provide a quick introduction and usable reference to the terminology and descriptions of ocular diseases. Although all the discussions are not applicable to veterinary medicine, this manual may be frequently employed by the veterinarian . . .

"This manual should provide a welcome and useful addition to any veterinarian's library."

The Physiological Basis of Medical Practice

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1357 pp., more than 600 figs., \$12.00

J.A.M.A., May 7, 1955:

"The present edition of this book incorporates the most extensive revision since it was first published nearly two decades ago. Nearly every page has undergone some alteration, deletion, or addition, with many figures redrawn and others added. The 80 chapters supply a wealth of information for practicing physicians, medical students, specialists of every complexion in medical science, and laboratory investigators. Few works are worthy of the term 'indispensable.' This book occupies a commanding position for that appellation."

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APPLICATIONS

Applicants—Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent association shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

ANDERSON, DONALD B.
P.O. Box 54, Sparta, Tenn.
D.V.M., Texas A. & M. College, 1929.

CROSS, ROBERT F.
206 Awakea Rd., Lanikai, Hawaii.
D.V.M., Ohio State University, 1946.

DOLBY, ARTHUR F.
304½ Main St., Deshler, Ohio.
D.V.M., Ontario Veterinary College, 1951.

GODKIN, MARGARET L.
P.O. Box 266, Innisfail, Alta.
D.V.M., Ontario Veterinary College, 1955.

WILL, DONALD H.
45 Waverly Ave., Newton, Mass.
D.V.M., Colorado A. & M. College, 1955.

YOUNG, STUART
702 S. Sixth Ave., Bozeman, Mont.
D.V.S.M., Royal (Dick) Veterinary College, Edinburgh, Scotland, 1951.

ZULONAS, JOHN

493 Giroux St., St. Boniface, Man.
D.V.M., Hannover Veterinary College, Germany, 1946.

Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and names of his endorsers.

Second Listing

WAINRIGHT, CHARLES R., 2154-1 S.U., Ft. Lee, Va.

STUDENT CHAPTER ACTIVITIES

California Chapter.—The first meeting of the University of California Student Chapter of the AVMA for the spring semester was held on February 8. Dr. Donald Cordy, associate professor of veterinary science at the University, entertained the group with an amusing commentary on his experiences in the Army Veterinary Corps.

Highlighting the Chapter's activities during the coming semester will be a spring formal

(Continued on p. 341)

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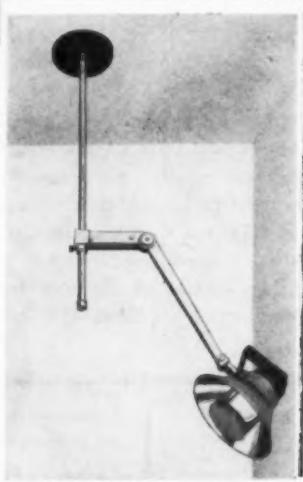
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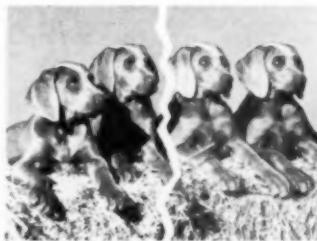


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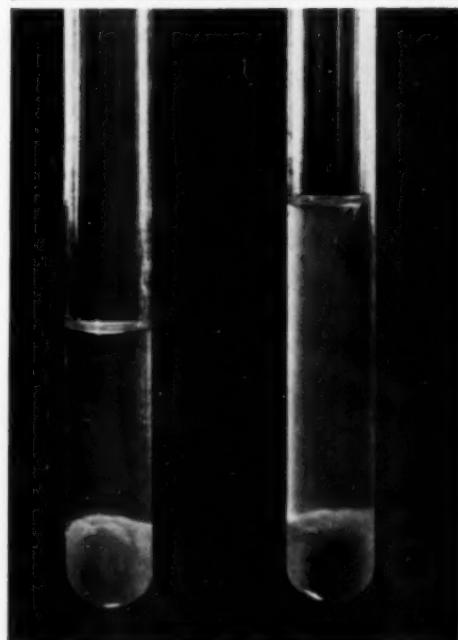


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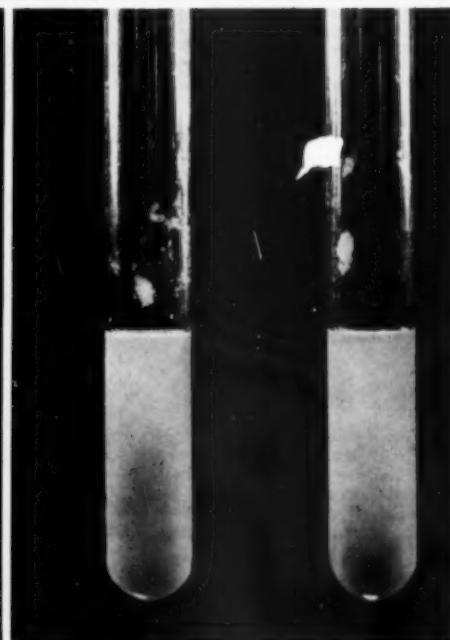
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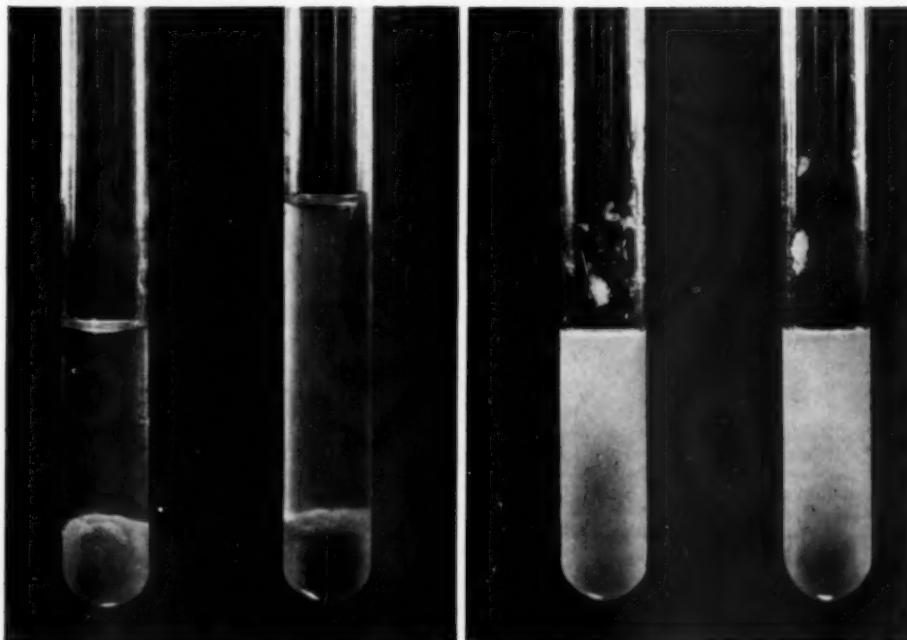
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Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. G. J. Phelps, Jr., Montgomery, Ala., secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. W. R. Laster, Jr., 213 N. 15th St., Birmingham, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Pima County Veterinary Medical Association, the third Wednesday of each month in Tucson. E. T. Anderson, 8420 Tanque Verde Rd., Tucson, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Wilfred Pimentel, 3455 S. Elm Ave., Fresno, Calif., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. B. C. Watson, 825 14th St., Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Co-

pell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. Howard C. Taylor, 2811 West Olive St., Burbank, Calif., secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of

(Continued on p. 30)

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Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Jacksonville Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. George F. Yopp, 4644 Main St., Jacksonville, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Charles J. York, P. O. Box 1656, Indianapolis 6, Ind., secretary.

Michigan Veterinary Medical Association, the second Thursday of each month, at the Hotel LaSalle, South

Bend, Ind. L. D. Ramsay, 719 E. Jefferson Ave., La Porte, Ind., secretary.

Tenth District Veterinary Medical Association the third Thursday of each month. W. E. Sharp, Union City, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. D. A. Buchanan, Grundy Center, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, Wau Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

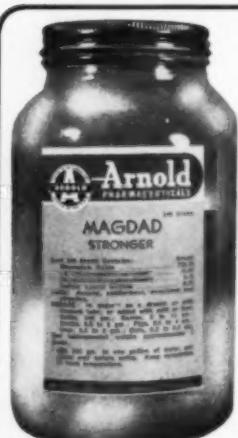
Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Winnebago Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

KENTUCKY—Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. Dr. W. E. Bewley, P. O. Box "H", Crestwood, Ky., secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

(Continued on p. 32)



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Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 3, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7304 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genesee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old High Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mano in Teaneck, N. J. Edward Baker, 568 Grand Ave., Englewood, N. J., secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association, of the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 45 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. J. W. Peace, High Point, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. Wm. Allen Potts, 401 W. James St., Mount Olive, secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. W. W. Dickson, Box 1071, Gastonia, N. Car., secretary.

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. James M. Brown, 2818 W. Britton Rd., Oklahoma City, secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Merle S. Watts, 5302 E. 11th St., Tulsa, Okla., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fair-

(Continued on p. 34)

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Department of Veterinary Medicine

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and steak bake. The freshman class is in charge of the Chapter's float for the Cal Aggie picnic day parade.

Serving as officers for the current semester are Dale Johnson, president; Dan Smith, vice-president; Edward Nevin, treasurer; and Robert Lindstrom, secretary.

S/ROBERT LINDSTROM, Secretary

• • •

Missouri Chapter.—At the January 12 meeting of the University of Missouri Student Chapter of the AVMA, Mr. C. O. Harris talked about Glacier National Park and showed slides taken there. Mr. Harris, an instructor at Stephens College, serves each summer as a ranger biologist at Glacier Park.

The following officers will serve the Chapter during the spring semester: Robert Fuchs, president; Leonard Palmer, president-elect; Grauman Wikstein, vice-president; Bill Merritt, secretary; and Walter Allen, treasurer.

S/GARLAND LINDSEY, Retiring Secretary

forest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Tuesday of each month in the Trinity Episcopal Church, 8th and James St., Seattle, Wash. P. R. Des Rosiers, 5508 2nd Ave., N. W., Seattle 7, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. Jo Walker, Agriculture Experiment Station, Puyallup, Wash., secretary.

WEST VIRGINIA—Kyowa (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W., Huntington, W. Va., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

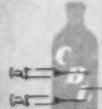
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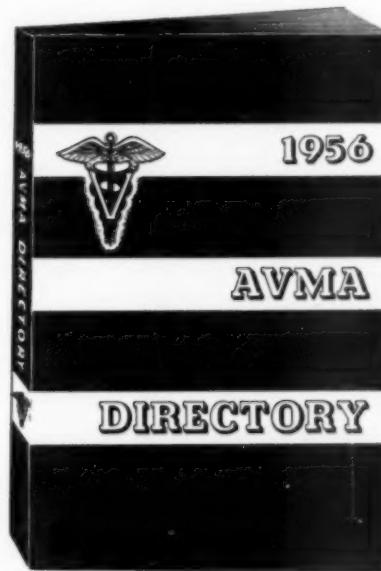
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(Continued on p. 38)

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RESEARCH LABORATORIES, INC., Saint Joseph, Missouri

Correspondence

January 26, 1956

Dear Dr. Aitken:

Reference is made to the item entitled "Anthrax in 1955," appearing on page 98 of the JOURNAL (Jan. 15, 1956).

The statement that "New York reported 5 cases, *the first in 25 years*" should be corrected to read as follows:

New York reported six outbreaks. One of these occurred on a farm where the disease had not appeared for 25 years, which is an example of how the infection may persist in the soil for long periods.

Actually, New York is the only state on the eastern seaboard that has reported one or more sporadic outbreaks *every* year for the past 11 years.

Very truly yours,
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Beltsville, Md.

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Serologist wanted, B.S. or M.S. in bacteriology and in immunology. Experience: at least 2 years in a laboratory performing serological work such as preparation of hyperimmune serums, complement-fixation tests, serum-neutralization tests, etc. Employment conditions: beginning approximately \$7,200 P.A. tax free, plus family allowances. Duration: initial period 2 years. Location: Pan American Foot and Mouth Disease Center, Rio de Janeiro, Brazil. Apply in writing to: Pan American Sanitary Bureau, Regional Office of the World Health Organization, 1501 New Hampshire Ave., N.W., Washington 6, D.C.

Veterinarian wanted for large and small animal practice. Permanent position; state qualifications, references, and starting salary expected in first letter. Address Black Hills Animal Hospital, East Highway 79, Rapid City, S. Dak.

Dale, Indiana, needs licensed veterinarian. Modern, diversified farming. Highways in four directions.

(Continued on p. 40)



small animal therapy note

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Your clients will be highly pleased with the dramatic results obtainable with Jen-Sal's Canine Wart Vaccine. This product is prepared from canine oral papillomas and in tests has proved 100% effective following two subcutaneous 2 cc. injections. The suggested dosage is 2 cc. subcutaneously, or 0.5 cc. intradermally, at 10 to 14 day intervals. Another contribution to small animal medicine from Jen-Sal research.

six 2 cc. vials
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Young Miss Maass bet her life



EVEN at 6:00 A.M., it is warm in Havana. But young Miss Clara Louise Maass felt chilly. Her head ached. Worse, she knew nothing would help.

The illness starts like any other febrile attack. But soon the face is flushed. There is high fever. After two or three days, the pulse becomes feeble, the skin cold and of a lemon-yellow tint. Chances of recovery hardly approximate 50%.

In seven pain-wracked days, yellow fever killed Clara Louise. And it was her own doing.

At Las Animas Hospital, Cuba, in 1901, volunteers were needed for the famous U.S. Army yellow fever experiments.

And she, who had fearlessly nursed the worst fever cases, thought undergoing the disease herself would make her a better nurse. She asked to be bitten by an infected mosquito. "I tried to dissuade her," said the medical director. "But she insisted."

So, in what would soon be America's victorious battle against yellow fever, Clara Louise Maass bravely died as she had lived—for others.

Yet the steel of her quiet, devoted courage still gleams in the strength of today's Americans. For it is still American courage and character that make our country secure—and that actually back our nation's Savings Bonds.

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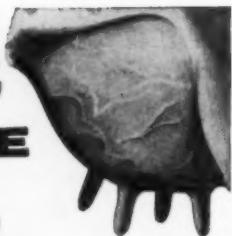
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MASTICS SAVE TIME, MONEY, MILK

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(CLASSIFIED ADS—continued from p. 38)

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Veterinarians needed for small animal work in metropolitan hospital; must have New York license. Address "Box G 5," c/o JOURNAL of the AVMA.

Veterinarian wanted for general practice in New England. House can be furnished at small animal hospital. State qualifications and salary expected in first letter. Address "Box G 9," c/o JOURNAL of the AVMA.

Assistant veterinarian wanted in small animal hospital in Cleveland. Please include details in first letter. Address "Box G 11," c/o JOURNAL of the AVMA.

Veterinarian wanted for small animal practice in Chicago suburb. State qualifications and salary expected. Address "Box E 22," c/o JOURNAL of the AVMA.

Assistant veterinarian wanted in poultry pathology diagnostic laboratory. Address Dr. O. Schwabe, Vineland, N.J.

Veterinary assistant wanted June 1, 1956, for small animal practice in northern New Jersey. State age, marital status, personal data, professional references, salary expected, experience and estimated length of time available. Address "Box G 12," c/o JOURNAL of the AVMA.

(Continued on p. 42)

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infectious canine hepatitis vaccine

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INDICATED

When a durable immunity against Infectious Canine Hepatitis is desired.

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When a durable immunity against EITHER or BOTH Canine Distemper and Infectious Hepatitis is desired.

• Sold only to Qualified Graduate Veterinarians.

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Fromm Laboratories Inc.
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Veterinarian capable sharing full responsibilities wanted in New Jersey small animal practice; grown rapidly beyond what one man can handle; must be able to handle clientele successfully. Minimum 2 years' small animal experience; guaranteed time off but not afraid of hard work. State all qualifications, references, personal details first letter; excellent starting salary and high percentage of new business. Address "Box G 14," c/o JOURNAL of the AVMA.

Veterinarian wanted for small animal practice and zoo work; opportunity for partnership. Address Dr. Byron Bernard, 644 E. McMillan, Cincinnati 6, Ohio.

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Wanted—Practices

Experienced dairy practitioner wants to buy or lease practice in East or near Middlewest; or will

(Continued on p. 43)

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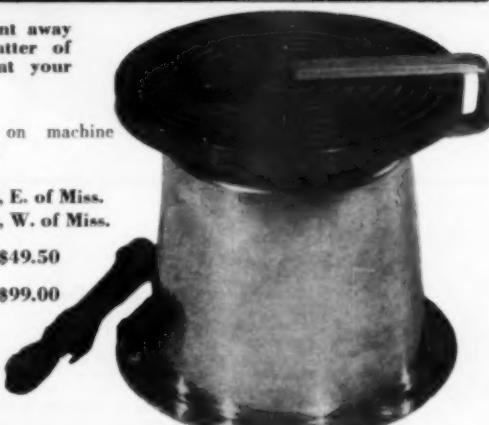
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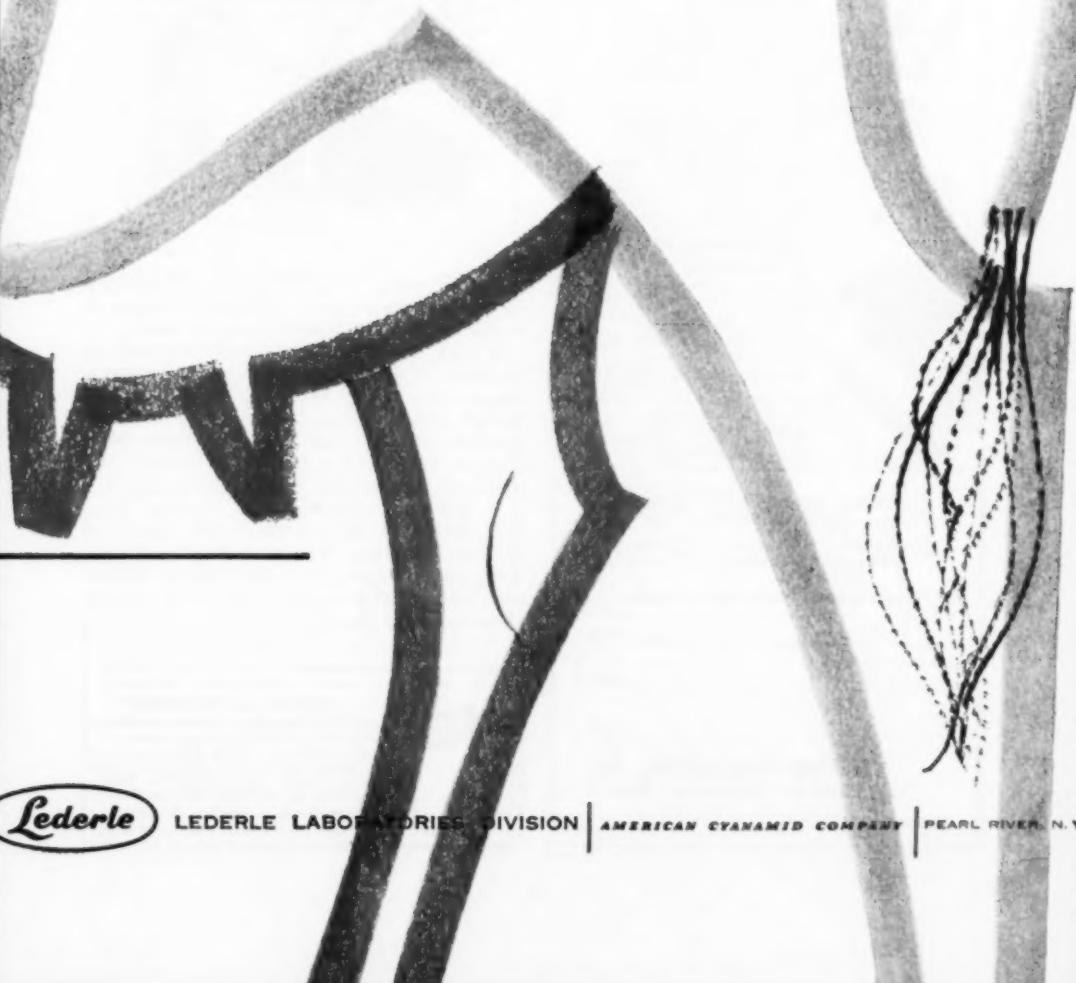
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Dr. La Salle Named Manager of Arnold Laboratories

Dr. Bernard LaSalle, D.V.M., has been named general manager of Arnold Laboratories, New Castle, Ind., manufacturers of veterinary pharmaceuticals.

Dr. LaSalle was born in Joliette, Que., and attended Oka Agricultural College, La Trappe,



Dr. Bernard LaSalle

Que., University of Montreal. Later he received the D.V.M. degree from the Quebec College of Veterinary Medicine, University of Montreal.

In 1941, Dr. LaSalle was appointed veterinary bacteriologist in charge of Accurate Laboratories, London, Ont., where he worked in the manufacture of some 50 bacterins, antiserums, antigens, glandular extracts, and sterile solutions. Since 1952, he has served as director of research and production manager for Arnold Laboratories.

Dr. LaSalle is a member of the American Veterinary Medical Association, the Indiana Veterinary Medical Association, Canadian Veterinary Medical Association, Ontario Veterinary Medical Association, American Pharmaceutical Association, and the Ohio Veterinary Association.

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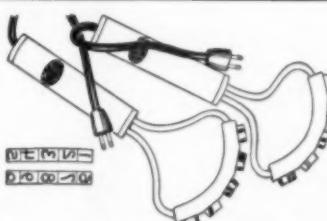


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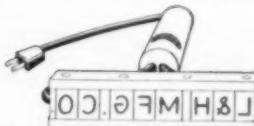
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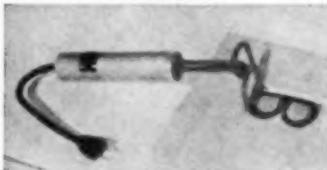
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a smooth muscle
antispasmodic and analgesic
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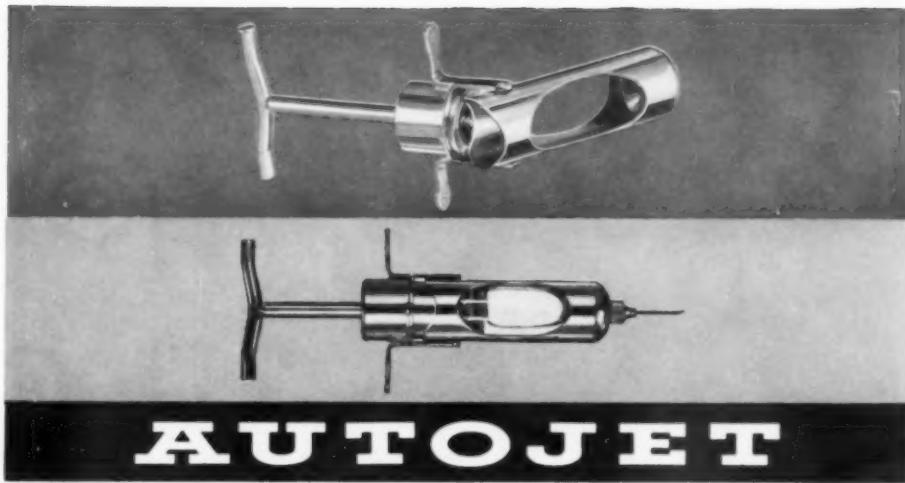
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